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INASMUCH.
(Collins Street, Melbourne.)

By R. Lawson.

I.

Walking the city streets one Sunday morn
Early—deserted pavements, raw, chill air—
Each thoroughfare a stony river bed
Void of its week-day surging human tide,
Walking and musing on the solitude,
And wondering, "Can this be the self-same place
Wherein was crowded life but yesterday?"—
I strangely thought, "Suppose this be the end,
And human life shall come and go no more"!
For to my mind had somehow come the words
A preacher spoke of late—"The end is near,
Signs, wonders, all foretell, wars and disunion,
Strikes, social discontents, calamities,
Shipwrecks," and all the ills fore-heralding
The doom declared of old; and how he said,
"The Lord will come in glory and in power,
Bursting the clouds, with lightning round His head,
And countless angels; yea, the end is near",
And how he raised his hands, and bade prepare,
"The day is hastening on." Musing on this,
I wondered would the Lord e'er deign return
Unto a world where scorn and bitterness,
No place to lay His head, a felon's cross
Had been his lot; or, if He came at all,
Would He (as some suppose) come trumpeted,
Like some loud play-house deity, bedecked
In shiny crown, tinsel apparel, noisy
Shouting and thunder, lightning and the rest.

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II.

So, doubting He would ever come at all,
I suddenly was 'ware of one poor form,
A woman fast asleep upon a step—
Ill-clad, her head against the granite wall;
Upon her lap her little store of matches,
Studs, laces, and the like, her means of life—
Fall'n deep asleep, belike exhausted sheer,
When last night's crowd had died away—alone,
Still in the attitude of sale; her arm
Resting with elbow on her knee, outstretched
With palm half-open, but the finger and thumb
Still proffering a match-box—fast asleep!
I stood and read—an easy story: spoke;
Received no answer: something whispered "Give"!
Into the lifeless palm I dropped a coin,
Feeling a pity that was strangely sweet.
The palm closed instantly—habit is strong;
She started, woke bewildered, felt the coin,
Looked at it, looked at me; but neither spoke.
But whether she discerned within my eyes
Sympathy and acknowledgment of kinship,
She smiled a weary smile of thanks that made
Me sad and glad at once. I walked away,
She looking after me. Somehow, the street
Seemed all transfigured; and—perhaps 'twas fancy—
I heard the preacher's voice again, quite changed
And whispering me, "Behold, thy Lord is come"!

JUDGMENT.[1]

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III.

V. HOW DO WE DETERMINE WHETHER OR NOT A JUDGMENT IS TRUE?

§ 1.

As we saw, a judgment is true if the construction which it identifies with the real is identical with it, but false if it is not. But how are we to determine whether or not the construction is identical with the real? The obvious answer seems to be that we should "look and see". This answer may be[2] correct, if someone else has told us, or if we (believe we) remember having seen that they are identical, but do not ourselves or at the moment see that they are. If I am told that I put my pen in my pocket, or that the square root of two is 1·413, or if I remember that the number of my watch is 1342, in each case, if I want to make sure that this is so, the proper procedure is to "look and see". That (if possible) is the proper procedure in every case in which what is asserted is not at the moment apprehended by the person considering whether the judgment is true.

So much is obvious. But it does not imply that the answer to our question is that we determine whether a judgment is true by comparing it with a corresponding apprehension, for, as apprehension is itself judgment, the same question arises in regard to it. It does not touch the real problem at all. The question is not, What steps should I in practice take in order to determine whether a given proposition is true? but, How am I ultimately to assure myself that the judgment which I am now myself making is true? Here there can be no appeal to a corresponding apprehension, for here judgment and apprehension cannot be distinguished. Here I apprehend what I assert, and assert it in apprehending it. Here, if I do not apprehend what I (verbally) assert, I am not judging, but simply talking. The question then is, How is the person who originally makes the judgment to determine whether what he (believes he) apprehends[1] as being the case really is the case? Or, How is the person to whom the judgment is communicated to tell whether what he (believes he) apprehends as being the case, when he does "look and see", really is the case? In short, How are we to determine whether the judgment, which is itself (believed to be) the apprehension of that which it asserts, is true? Or, How can we be sure that the construction which we (believe we) see to be identical with the real, is identical with it? Again, the question is not, How do we apprehend? Or, How do we see that the construction is identical with the real? To that question it is not possible to give any real answer. I may be able to give an account of the procedure I adopt in order to see, but not of the seeing itself. The question is not, How do I see? but How can I be sure that what I see to be the case is the case?

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[1] Presidential Address delivered at the Tenth Annual Meeting of the Australasian Association of Psychology and Philosophy, University of Sydney, August 19th, 1932.

[2] I say may be, because it may be impossible to look and see.

It is useless arguing that if we see that the construction is identical with the real, then it must be identical with it, on the ground that if it is not, then we do not see, but only believe we see that it is identical with it. If we use "see" in this sense, it is not necessary, in order to judge, to see that a construction is identical with the real, but only to believe that I see this. The question then is, How can I be sure that this belief is justified? How can I be sure that I do not merely believe I see, but that I do see that the construction is identical with the real?

On the other hand, it is true that if I (believe I) see that the construction is identical with the real, it must be identical with it, unless I am making a mistake. In the case of a judgment which is itself the apprehension of that which it asserts, the very fact that I make the judgment guarantees its truth, provided I am not making a mistake. The question therefore really is, How can I be sure that in making this judgment I am not making a mistake? Consequently, in considering whether a judgment is true, we are not faced with the entirely open question, Is this construction identical with this real? The very fact that I see that they are identical

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[1] Apprehend, perceive, see, hear, etc., are all used ambiguously. They may be so understood that it is not true that we apprehend A as X (though we may believe that we do) unless A is X. On the other hand, they may be so understood that if we believe we are apprehending A as X, then we are apprehending A as X, even though in fact A is not X. If it is used in the former sense, the words "believes he" will be required; if it is used in the latter sense they will not be required.

(*i.e.*, make the judgment) is positive proof that they are identical, provided I am not making a mistake. The question is open at all only because we may be making a mistake. This point, we shall see later, is of fundamental importance.

§ 2.

One way of making sure that I am not making a mistake (or of detecting it if I am making one) when I (believe I) see that a certain construction is identical with the real, is to "look again", or to get someone else to "look and see". Here we compare the construction identified with the real on one occasion or by one person, with the construction identified with it on another occasion or by another person. This clearly is what we do. But how are we to describe our procedure in terms of judgment? Are we to say that we compare one judgment with another? Or should we say that we compare the same judgment with itself? The answer depends on whether we regard the judgment as an asserted content or as an act of assertion. For, though we have two distinct acts of assertion, nevertheless (provided that in neither case a mistake is made) it is the same content which is asserted in each case. As, however, "judgment" is used in both senses, and is the most suitable term for each, it seems better not to restrict it to either sense, but to allow it to cover both, and where necessary add a qualifying phrase to indicate which sense is intended. We may therefore describe our procedure as follows. We compare what, as acts of assertion or as existentially considered, are two distinct judgments, but which have the same logical subject, with a view to showing that they also have the same logical predicate, and so, logically considered, are identical. In other words, we seek to confirm our judgment by comparing it with a judgment existentially distinct from it, but with which it must be logically identical if both judgments are true.

This procedure is usually adopted, and practically speaking is generally sufficient, where we are liable to fall into error, not through adopting the wrong method or making an illegitimate assumption, but simply through making a slip, or through mal-observation. Thus, if we want to make sure that we have added a column of figures correctly, we add them again, or get someone else to; if we want to make sure that we have read a sentence correctly, we read it again, or get someone else to. For it is unlikely that we will again, or that someone else will, make the same slip or mal-observation—though it is theoretically possible. Where, however, liability to error is due to the fact that we may be following a wrong method or making an illegitimate assumption, this procedure is not sufficient even from a practical point of view, for we are likely to make the same mistake again, and anyone else may do so. Here it is not sufficient simply to compare our judgment with a judgment existentially distinct from it, but with which (provided both judgments are true) it is logically identical; we must go beyond the content of our judgment. This may also be necessary in practice, and is theoretically necessary, if we want to provide the fullest confirmation of our judgment, even where error is likely to result only from a slip or from malobservation. It may, then, be necessary in practice, and in theory is always necessary, to go beyond the content of a given judgment in order to make sure that it is true.

What is there beyond its own content by reference to which we can test and confirm a judgment? It should be clear from what we have already said that there is nothing but other judgments. It cannot be objected that we may appeal to perception, for perception is itself judgment. We have no contact with reality except through judgment. Consequently the only way in which we can test and confirm a judgment, by going beyond its own content, is by showing that if it were not true, then certain other judgments also would not be true. That, however, would not imply that the original judgment was true, if these judgments were false. Consequently, it may be said, it is useless appealing to other judgments, unless it is certain that these are true. But we can be sure that they are true (it may be said) only if either they themselves or others which imply them are in the nature of things necessarily true. When I say that they are in the nature of things necessarily true, I do not mean simply that they are in fact true, or that we have grounds for being certain that they are true. I mean that the mere fact that they are made is proof positive that they are true; that we can find grounds for being certain that they are true without going beyond their own content. When I say that a judgment is liable to be false, I mean simply that it is not in this sense necessarily true. Are there, then, certain judgments which are thus in the nature of the case necessarily true, and which therefore can be used as a standard for testing all others and confirming those that are true?

§ 3.

There are two types of judgment which might seem to be, and according to Professor Stout[1] are, necessarily true: (1)

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[1] Immediacy, Mediacy and Coherence, in *Mind*, 1908. Reprinted, Ch. 14 of *Studies in Philosophy and Psychology*.

Perceptual judgments so far as they do not go beyond the immediate datum; (2) Self-evident propositions, such as "what is included in a part is included in the whole". Let us consider these in turn.

(1) *Perceptual Judgments.*—Professor Stout himself admits that, (1) though we can form a series of judgments which progressively approach closer to the ideal of a judgment which does not go beyond the immediate datum, we can never attain this ideal; (2) that in proportion as the judgments of this series approach this ideal, they become useless as a means of testing and confirming the judgments we do in fact make.[1] But that is surely to confess both that there neither are nor can be any perceptual judgments which are necessarily true, and also that, even if there were, they would not enable us to determine whether the judgments in which we are interested are true.

I believe that this conclusion is inevitable. The very fact that they sometimes prove to be wrong is sufficient to show that none of the perceptual judgments which we ordinarily make are in the nature of things necessarily true. This statement, it must be remembered, neither asserts that all of them may be false, nor denies that we are entitled in most cases to maintain that they are true; it simply maintains that in no case does the mere fact that we make the judgment suffice to guarantee its truth. Suppose, for instance, looking at the object in my hand, I make the perceptual judgment "this pen is grey". The mere fact that I make this judgment is not proof positive that it is true, for the pen may seem grey to me only because I am colour-blind, or because I am looking through a tinted medium which I fail to detect. It does not even prove that it is a pen that I am holding, or, if we take account of dreams, that I am holding anything at all. All that it does prove is that "it seems to me that this pen is grey". That judgment, if made in these circumstances (*i.e.*, where I in fact judge that "this pen is grey"), would, in the nature of the case, necessarily be true. I cannot, however, from this, conclude that the pen is grey, or even that it exists. It is not a perceptual judgment at all, but simply a statement as to the nature of my immediate experience at the moment, on which I fall back if I find that my judgment about the object of this experience (the pen) is false, and with a view to explaining why I made this judgment. From it I can infer my own existence as subject, but it does not enable me to draw any conclusion respecting anything objective. Consequently, though necessarily true, it does not enable me to test or confirm any judgment about anything objective, *i.e.,* any judgment about anything but my own immediate experience, or myself as the subject who has this experience. It does not, therefore, enable me to test or confirm any judgment which I would normally make or wish to confirm.

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[1] *Mind,* 1908, pp. 29-30.

Our conclusion, then, is this: Any judgment which, being concerned solely with immediate experience, is necessarily true, is useless as a test of the truth of other judgments; any judgment which, not being restricted to immediate experience, would (if necessarily true) be useful as a test of the truth of other judgments, is not necessarily true. To assure myself that it is true I must go beyond it at least to a judgment existentially distinct from it, and probably to judgments logically different from it.

(2) *Self-evident Propositions.*—Are there, then, self-evident propositions which can be used as a test of the truth of others? There can be no doubt that there are propositions which are self-evident in the sense that, though they cannot be deduced from other propositions, they are, nevertheless, just as evident as propositions which are deduced from accepted propositions. Thus the proposition, "If A is equal to B, and B is equal to C, then A is equal to C", though it cannot be deduced from any other proposition, is just as evident as the conclusion "A is equal to C" is if the premisses "A is equal to B" and "B is equal to C" are granted. Obviously; for it simply states the implication in virtue of which this conclusion is evident. Consequently, if it were not evident, this conclusion would not be evident, and therefore would not be a conclusion. Similarly, the general principle according to which we draw this conclusion (namely, that things which are equal to the same thing are equal to one another), though it cannot be deduced from anything else, nevertheless is obviously not less evident than the conclusion we draw in accordance with it. Again, if the conclusion "A is equal to C" is to be asserted categorically, then obviously there must ultimately be premisses which cannot be deduced from others, but yet are just as evident as this conclusion.

What is true in this instance is true in the case of all inferences. In every case, neither the particular implication, nor the general principle according to which the conclusion is drawn, can be deduced from anything else, and yet it is only if these are evident that the inference is possible. And, if the conclusion is to be asserted categorically, then the ultimate premisses also must be evident, despite the fact that they cannot be deduced from anything else.

There can be no doubt, then, that there are propositions which are self-evident in the sense that, though they cannot be deduced from other propositions, they are as evident as a conclusion which is. But are they necessarily true? The question, remember, is not whether certain ones or all are in fact true, but whether, simply in virtue of the fact that they are thus self-evident, they must be true. Now it is obvious that they are not; a proposition may be thus self-evident and yet false. For a proposition is self-evident in the sense indicated, if either it represents, either the particular implication in virtue of which, or the general principle according to which, any inference (whether valid or invalid) is made, or else is one of the ultimate premisses from which any conclusion (whether true or false) which is stated categorically is inferred. Consequently, where either the inference is invalid, or the categorical premiss is false, we have self-evident propositions which are false. If, for instance, we argue that "If A then B; but not A; therefore not B", we are accepting as self-evident the false propositions: "Where A implies B, if A is false, then B also must be false," and "If a ground is false, so is the consequent". Or, if I argue that "A equals B, and B equals C, therefore A equals C", where in fact A is not equal to C, I accept both "A equals B" and "B equals C" as self-evident, and yet one must be false. Consequently a proposition may be self-evident in the sense indicated and yet false. To assure myself that it is true I must go beyond it—at least beyond it existentially regarded, and probably beyond its content.

It is useless objecting that, where the proposition is false, it is not self-evident, but only seems so; *i.e.*, that a self-evident proposition is a *true* proposition which cannot be deduced from others, but is as evident as those which are deduced from others. For, though in that case every self-evident proposition will necessarily be true, we cannot determine which of the propositions which seem self-evident really are so, until we determine which of them are true. That is to say, we must know how to determine which propositions are true (*i.e.*, must know the answer to our question) before we can know which are self-evident. Where self-evidence is defined in terms of truth, if we put forward self-evidence as the criterion of truth, we are committing a vicious circle. The objection, therefore, is obviously futile.

We must conclude, then, that neither perceptual judgments, nor self-evident propositions, are necessarily true.

In general, there are no necessarily true judgments which can serve as a standard for testing all others and confirming those which are true. There is no such infallible standard of truth.

§ 4.

Every judgment to which we can appeal with a view to determining whether a particular judgment is true, is itself liable to be false. That however does not mean that it is useless appealing to it. If it did, "looking again" would be useless. For the judgment with which we there compare the original judgment is itself just as liable to be false as the original judgment. (For instance, if I add a column of figures twice and get different answers, the second answer is as likely to be false as the first.) If, however, the two judgments agree, it is unlikely that both are false. The fact that they must stand or fall together confirms both. It does so because each involves the apprehension of that which it asserts. No confirmation of either would be required, were it not that we are liable to make mistakes. Now what is true in this case is true also where the judgments differ in content. Any judgment to which we can appeal with a view to confirming the original judgment is itself liable to be false. If however it so hangs together with the original judgment that either (1) neither can be false unless both are, or (2) neither is likely to be false unless both are, that fact confirms both, for it is less likely that both are false than it would be that either occurring alone was false. Where judgments hang together in either of these ways they are said to "cohere". Where they hang together in the first way, we may say that they necessarily cohere; where they hang together in the latter way, that they probably cohere. If a judgment necessarily coheres with others, we cannot reject it as false without rejecting the whole body of judgments with which it thus coheres. (Thus, if we reject a single geometrical proposition, we must reject the whole system of which it forms a part.) This judgment, therefore, as it were, has the support, not merely of this system, but of each of the several judgments belonging to it. Where a judgment probably coheres with others, if we reject it as false (without substituting another judgment which coheres with them in the same way), though we are not compelled to regard the judgments with which it coheres as false, we can avoid doing so only at the expense of making the facts they assert unintelligible, in the sense of leaving them unexplained. (Thus if we reject a scientific hypothesis which explains a certain range of facts, without substituting another hypothesis which will also explain them, the facts become unintelligible.) Here we must either accept the original judgment or else, either reject these judgments or make the facts they assert unintelligible to ourselves. That is to say, though we are not compelled either to accept this judgment or to reject the whole body of judgments with which it coheres, we are compelled either to accept this judgment or to reject our mode of systematising the judgments with which it coheres. Even where the coherence is only problematic, it is a case of either accept this judgment or reject this system. This judgment, therefore, as it were, has the support of this system, even though it has not the support of each of the judgments which belong to this system taken separately.

The only way in which we can confirm a judgment, then, is by showing that it coheres in one or other of these ways with other judgments. At least, that is the only way, if we say that a judgment which is existentially distinct from, but has the same content as, another coheres with it. If we deny that this constitutes coherence, then we will say that there are two ways of confirming a judgment: (1) By showing that it has the same content as judgments existentially distinct from it; (2) by showing that it coheres with judgments having a different logical content. I propose in both cases to say that the judgments cohere.

§ 5.

Methods of Exhibiting Coherence.—We may distinguish six methods of showing that a judgment coheres with others, though not all are possible in the case of every judgment.

1. We may show that the judgment has the same logical content as judgments existentially distinct from it. We adopt this method whenever we "look again", or get someone else to "look and see," or whenever we check, or get someone else to check, any calculation. But it is not always possible to employ this method. (We cannot, for instance, observe again a past event, or repeat a calculation if the data have been destroyed.) And the result may not be conclusive; we may again be deceived by the same illusion, or make the same mistake. Wherever it is possible, however, it is the method which we normally try first, and in practice is usually considered sufficient.

This method of exhibiting coherence differs from all the others in that, whereas it is concerned with showing that the judgment to be confirmed (which I shall speak of as "the initial judgment") has the same logical content as others existentially distinct from it, the others are all concerned with showing that the initial judgment coheres with others having a different logical content. The coherence which it exhibits is necessary coherence, for obviously a judgment must be true, if other judgments, which are existentially distinct from it but have the same logical content, are true. But in thus exhibiting its coherence with other judgments, we do not finally prove that the initial judgment is true, for it is possible that the judgments with which it coheres are false.

2. We may show that the judgment can be deduced from judgments from which it was not originally deduced. The last clause is necessary because, if we simply show that the initial judgment can be deduced from the judgments from which it was originally deduced, we are not confirming it by showing that it coheres with these, but confirming our deduction of it by showing that this is logically identical with deductions existentially distinct from it. No doubt the initial judgment is coherent with the judgments from which it is deduced. But we are not concerned with this coherence. For apprehension of this coherence does not constitute a confirmation of the initial judgment, but is involved in that judgment itself. For where a judgment is merely deduced from others, we cannot apprehend what it asserts except by apprehending that it follows from these judgments. That is to say, we must apprehend its coherence with these in order to arrive at it at all. If, then, we show that it can be deduced from these judgments, we are simply repeating the inference by which we arrived at it, and in doing so are confirming this inference by showing that it has the same logical content as inferences existentially distinct from it. In other words, we are confirming this inference by means of the first method of exhibiting coherence. If, on the other hand, we show that a judgment can be deduced from judgments from which it was not originally deduced, we are confirming it by showing that it coheres with judgments having a different logical content.

The coherence which is thus exhibited is necessary coherence. In showing that the initial judgment thus coheres with others, we finally prove that it is true, provided (1) the deduction is valid, and (2) the judgments from which it is deduced are true. As a matter of fact, however, the deduction may be invalid, or these judgments may be false. Consequently, finally to prove that the judgment is true, it would be necessary to prove both that the deduction is valid, and that the premisses are true. On the other hand, the deduction can be invalid or the premisses false, only if we are making a mistake. Consequently we have not to confirm these before we can confirm (as opposed to finally prove) the judgment. We are, therefore, in adopting this method of confirming the judgment, neither entering on an infinite regress, nor taking the last step possible. For, on the one hand, we confirm the judgment even if we do not take this further step; on the other hand, we strengthen our confirmation of it, if we confirm the deduction and its premisses. The deduction is itself, we have seen, a self-evident judgment, and the ultimate premisses must be either perceptual or self-evident judgments. To confirm these judgments we must show that they cohere with others. To show that a perceptual judgment coheres with others, we may be able to employ any of the six methods, though in practice it is usually the first that we adopt. Self-evident judgments can be confirmed by any of the other five methods, but not by the present one, for by definition they cannot be deduced from anything else.

3. We may show that we can deduce from the judgment certain other judgments which we have independent ground for maintaining, but which we have reason to believe could not be true if this judgment were not true. We must have reason to believe that these judgments could not be true if the initial judgment were not true, but we must not be able to see that they could not be true if it were not true, for in that case we could deduce it from them, *i.e.*, could adopt the second method of confirming it. This method, therefore (so long as it is kept distinct from the second), can only exhibit probable coherence; it cannot in any case finally prove that the initial judgment is true. The extent to which it confirms it depends (assuming that the other judgments are true) on the ground we have for believing that it could not be true if these were not true. This, in turn, will depend on the extent to which our knowledge of the system to which all the judgments belong is exhaustive. This is the method which a scientist follows in confirming a hypothesis, if he does so by showing that consequences which can be rigorously deduced from it are realised.

4. We may show that if the judgment were true we would expect (but would otherwise have no reason to expect) certain other judgments to be true, which we have (or can find) independent ground for believing are true. This method is precisely the same as the last, except that in this case the judgments by reference to which the initial judgment is tested cannot be rigorously deduced from it; we can only show that we would expect them to be true if it is true. This expectation, however, must be reasonable; we must have grounds for entertaining it. Consequently, though we cannot say that

these judgments must be true if the initial judgment is true, it must be more probable that they will be true if it is true than if it is false. It does, therefore, cohere with them, although the coherence is only probable. The extent to which the initial judgment is confirmed by this coherence depends on the ground we have for expecting these judgments to be true if, but only if, the initial judgment is true.

We usually adopt this method if we wish to test or confirm a perceptual judgment which we cannot, or cannot sufficiently, confirm by the first method. If, for instance, I recognise a person in the distance as a friend, I expect him as he approaches closer to "look like" my friend, to have his peculiarities, to recognise and greet me, and so on. If these expectations are realised, I will not have any doubt but that it is my friend; if they are not realised I will realise that I was mistaken. This method is also followed by the scientist in confirming a hypothesis, in those cases in which the consequences of his hypothesis, which he shows to be realised, cannot be rigorously deduced from it. It is not, however, restricted to these cases. We can employ it whenever it is reasonable to expect that if, but only if, the judgment in question is true, then certain other judgments will also be true, which we have independent grounds for thinking are true.

5. We may show that we would expect the judgment to be true in view of the fact that certain other judgments are true. This method differs from the previous one in that, whereas there the fact that we believe that the initial judgment is true leads us to expect that certain other judgments are true, here the fact that we believe certain other judgments are true leads us to expect that this one will be true. It is identical with the second method except that in this case the initial judgment canot be rigorously deduced from the other judgments; we can only show that as these (we have reason to believe) are true, we can reasonably expect it to be true, *i.e.,* that as they are true it is probable that it also will be true. Its coherence with them, therefore, is only probable. We are employing this method if, for instance, we advance, as a reason for believing that a person committed a certain act, that this is what we would expect from our knowledge of his character or previous actions. We can employ this method whenever our knowledge of other facts could reasonably lead us to expect what the judgment in question maintains. Either this method or the previous one (or both) is likely to play a part in almost every argument concerning any topic which does not admit of rigorous deductions.

6. We may show that the judgment receives collateral support. We do so if we show that if the judgment is not true, then the general principle according to which it is made, and consequently all the other judgments we make according to the same principle, cannot be true. (Thus, if it were not true that "if A equals B, and B equals C, then A equals C", the general principle, "Things which are equal to the same thing are equal to one another", and, consequently, all judgments made according to it, would be false. The extent of the confirmation will depend on how certain it is that these judgments cannot all be false, and this in turn will depend on the range of knowledge which would have to be given up if they were false. (In the instance cited we would probably have to give up the whole of mathematics.)

This method is distinguished from the others by the fact that, as the initial judgment and the judgments appealed to are all, as it were, on the same level, we cannot infer directly (either with certainty or probability) that if the initial judgment were false, then the others would be false, or that as the others are true, the given judgment is true; we can do so only indirectly through the general principle which they all exemplify. The coherence is necessary if all the judgments are necessarily true if the general principle is true, but would necessarily be false if it were false; the coherence is probable if it is only probable that the judgments are all true if the general principle is true, but would all be false if it were false.

We employ this method (though often without indicating what the general principle involved is) whenever, in order to confirm a judgment, we appeal to (what we claim is) a parallel case or cases. It is also employed by the barrister who seeks to confirm his client's statement regarding certain points, by showing that he has told the truth regarding other points.

§ 6.

Objections.—Having discussed the various ways of showing that a judgment coheres with others, we are now better able to deal with certain objections which may be brought against our contention that the only way of confirming a judgment is by showing that it coheres with other judgments.

(1) It may be said that, though in thus showing that judgments cohere, we show that they hang together, we nevertheless leave them hanging in the air. We show that they stand or fall together, but we do not show that they are true. Any system of arbitrary propositions which we

like to construct will thus cohere, but we have no reason to suppose that they will be true.

(2) We must judge in order to exhibit coherence. But, it may be said, if in order to be certain that a judgment is true we must show that it is coherent with others, we cannot be certain that this judgment is true, and therefore cannot claim to have shown that the initial judgment is coherent with others, until we show that this judgment is coherent with others, and so on. That is to say, the attempt to show that a judgment is coherent with others leads to an infinite regress.

(3) Even if we waive the previous objection, we can never (it may be said) finally prove that any judgment is true, for every judgment with which we show that it coheres itself stands in need of confirmation. Hence, even if the attempt to show that a judgment coheres with others does not involve an infinite regress, the attempt to show that it is true does.

1. The first objection would be justified if each of the cohering judgments were, as it were, wholly dependent on the others for its support, *i.e.,* if the only ground we had for asserting it was the fact that it coheres with these.[1] Such, however, is not the case. It is true that a judgment can be confirmed only by showing that it coheres with others. But, as we saw in discussing the second method of exhibiting coherence, the coherence with others which confirms a judgment can never represent our ground for making it. The fact is that the judgment involves the apprehension of that which it asserts. Consequently, as we have already seen (section 1), we could be certain, without going beyond it at all, that the judgment was true, if we could be sure that we were not making a mistake. It will, as it were, stand on its own feet, provided it is shielded against the suspicion that the apprehension it involves may be mistaken. Or, changing our metaphor, it is tied firmly to reality by the apprehension it involves, provided this apprehension is not mistaken. It is to guard against this possibility that we show that the judgment coheres with others. The suggestion that a system of arbitrary propositions might cohere is obviously irrelevant, for arbitrary propositions, whatever they may be, certainly are not judgments.

2. In answering the first objection, we have virtually answered the second also. For the judgment, which asserts the coherence of the initial judgment with other judgments, involves the apprehension of this fact. Consequently it also

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[1] Cf. Stout—*Mind,* 1908, pp. 35-6, *Studies,* p. 320.

is certainly true, provided we are not making a mistake. If we were not entitled to make this judgment until we confirmed it, we would not be entitled to make any judgment until we confirmed it, *i.e.,* would not be entitled to make any judgment at all.

3. In a sense the third contention is justified. We would finally prove that a judgment was true if we could show that it belonged to a self-complete, necessarily coherent, system of judgments, *i.e.,* a system of judgments none of which can be false unless all are, and which is in no way dependent on anything outside. In that case, there would be no ground either within or without the system on which we could question or doubt the truth of the judgment. There would be none within the system because everything within the system would confirm it; there would be none outside the system because there would be nothing outside which could make any difference to it.

This is, of course, an ideal to which we can never attain. To that extent the objection is justified. But it is an ideal towards which we can at least make some advance. We can progressively confirm a judgment by showing that it coheres with more and more judgments. In proportion as we widen its range of coherence, we both provide increasing support for it, and diminish the ground from which it can be attacked. To show that it cannot possibly be questioned, we would have to show that every possible judgment, the truth or falsity of which has any bearing on the truth or falsity of it, coheres with and confirms it. If, however, we can show that every judgment, the truth or falsity of which we can see to have any bearing on its truth or falsity, coheres with and confirms it, there is no ground on which we can question it. This is not an unattainable ideal.

THE UNCONSCIOUS SIGNIFICANCE OF FAIRYLAND.

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I.

The universal appeal exercised by myths and fairy tales, and the close resemblance which exists between tales found amongst widely scattered peoples, have been studied by many different sciences and have been given many different explanations; but an entirely new light has been thrown upon the whole subject by Freud's brilliant discovery of the remarkable similarity which exists between the myths of primitive man and the dreams and phantasies of civilized persons.

The resemblance has been worked out in some detail by Abraham,[1] Rank,[2] Riklin,[3] and others, and interpretations in terms of the Freudian conceptions have been found for many different types of fairy tale. However, since most of this work has been done by Freud's followers, the explanations given have been, for the most part, of a sexual nature, and though probably true as far as they go, do not tell the whole story. No one motive can ever provide a satisfactory explanation of these mental phenomena. The whole range of human instincts and emotions must be taken into account. I propose, therefore, to examine certain groups of stories rather from the standpoints of Adler and Jung, though recognizing, of course, that any such explanation is necessarily partial and does not exclude other interpretations of a different kind.

Adler undoubtedly overemphasizes the egoistic aspect of human nature, but present-day life, with its emphasis on competition and individual achievement, certainly tends to develop the "will-to-power" to an unusual degree, and hence renders this tendency one of current importance. Many interesting parallels to folk-lore themes may be found in modern literature, for the fairy tale is very largely an imaginary compensation for feelings of inferiority and mental and physical limitations.

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[1] "Dream and Myth."
[2] "The Myth of the Birth of the Hero."
[3] "Wish Fulfilment and Symbolism in Fairy Tales."

An enquiry into the nature of fairy tales may perhaps be most aptly begun by a study of fairyland itself, that strange, beautiful and enchanted country where miracles happen on every side and excite no surprise. Obviously, it is in many respects a land of wish-fulfilment, of "dreams come true", so that Freudian investigators may claim to have found here ample confirmation of their theories. It would appear, however, that it is not only, nor even mainly, sexual desires which find satisfaction in fairyland; indeed, it is in this connection that Adler's conception of the inferiority complex, with its compensatory "will-to-power", seems to throw an entirely new light upon the whole problem.

In order to gain a clear understanding of the significance of fairyland, it will be best to divide the study into three sections, each dealing with a somewhat different aspect of the subject.

(1) THE RETREAT FROM REALITY.

In the first place, then, it is interesting and significant to observe that fairyland is, in many ways, indistinguishable from the land of the dead. Even the descriptions of it often coincide to a remarkable degree with old religious descriptions of Paradise. There is the same delightful climate, sweet perfumes, beautiful flowers and delicious food, though in both cases, if the magic food is eaten by a mortal, he usually becomes a captive in the enchanted land and can never again return to his home.

An excellent description which could apply almost equally well to fairyland and to Paradise is that given by Tennyson in the "Passing of Arthur", of the

island valley of Avilion;
Where falls not hail, or rain or any snow,
Nor ever wind blows loudly; but it lies
Deep-meadowed, happy, fair with orchard lawns,
And bowery hollows, crowned with summer sea.

Again, both fairyland and the land of departed souls are often located in the west, and have to be reached by crossing the sea or a river. Or they may be in the sky and are attained by climbing a high mountain or a magic tree or vine. More often still, the land of the dead is a dark and gloomy underworld and, though fairyland is seldom of this nature, we often find that the entrance to it is a cave or a secret door in the hillside; or perhaps it may be a well or merely a hole in the ground. All restrictions of time are banished from both places

—a day may be as a thousand years and a thousand years as one day. The dead sleep on, heedless of the flight of ages and the unwary mortal who enters fairyland may find, on his return, that centuries have passed away, though it has seemed to him to be only a few hours.

Moreover, when living persons are stolen away by the fairies, dead images are often left in their place, while, on the other hand, those who have died are sometimes recovered from the underworld and resume their life upon earth.

For these reasons, some writers have endeavoured to identify fairyland with the land of the dead and the fairies with the gods and ghosts of our primitive ancestors, an explanation which is probably quite legitimate up to a point. As we have already seen, no one interpretation can ever be sufficient to explain all the strange features of myths and fairy tales, and as death must have been an object of great mystery and terror to the savage, it is natural that he should have had many myths to account for it. Moreover, man's love of life, his "instinct of self-preservation", is so strong that it is almost impossible for him to believe in his ultimate extinction; hence we find that a belief in the possibility of vanquishing death, or of obtaining some form of life after death, is deeply rooted in the human soul. If the elixir of life cannot be found in Hades or Paradise, he seeks for it in fairyland, where all wishes are fulfilled, for both are equally realms of the supernatural. For this reason we might claim that fairyland is the land of life rather than of death; that the fairies are not spirits of the dead, but of the living, being personified projections of our own thoughts and feelings. In fact, as we shall see, it is this dual character of fairyland which gives the real clue to its deepest significance.

Let us glance for a moment at a type of story in which this aspect of death and the renewal of life are clearly expressed, namely, the sun-myth. Reproduction, growth and death are naturally closely connected with the sun, not only because of its effect upon all life processes, but also because of the mystery of its daily course across the heavens. The sun sets each evening, but it does not die. It sinks into the sea or behind the hills and in the morning is born again with new strength and beauty. So, also, the mortal who is daring enough to enter fairyland and overcome all its dangers, returns to the world enriched with wonderful treasures. Most of the great religious and mythological heroes are unmistakable sun-gods who renew their youth by a mystical rebirth and so become immortal, like the sun.

The reason why Paradise and fairyland are so often placed in the west now becomes clear. It is the place where the sun sets and renews its strength. The wish is that the waters of death may become the waters of life; that the souls of the dead may be restored to life as the sun is restored in the morning.

Tales in which the hero is swallowed by a monster have the same significance. Tom Thumb, for example, makes quite a habit of this rather uncomfortable proceeding, being swallowed in turn by a cow, a giant, a fish, a miller and a salmon, by all of whom he is safely disgorged. Little Red Riding Hood also represents the sun, and in the earlier versions of the story the wolf swallows her as well as the grandmother, and both are restored when the animal is killed. There are almost endless variations of this theme, for the typical parts of a myth may be united in all conceivable ways. Jung[1] quotes a legend from Frobenius which is a very good example of this type of story:

> A hero is devoured by a water monster in the West. The animal carries him within him to the East. Meanwhile, he kindles a fire in the belly of the monster, and since he feels hungry he cuts off a piece of the hanging heart. Soon after he notices that the fish glides upon the dry land; he immediately begins to cut open the animal from within outwards; then he slides out. In the fish's belly it had been so hot that all his hair had fallen out. (Hence he emerges hairless, like a new-born babe.) The hero frequently frees all who were previously devoured and all now slide out.[2]

Now we cannot assume that an interest in astronomy came first and that these tales have purely an explanatory value. It is rather the reverse process which has taken place; man explained natural phenomena in terms of his own psychic processes. What, then, we may ask, is the psychological significance of this underworld, this western Paradise, to which the souls of the dead journey for rebirth? How does the rejuvenation of these sun-heroes take place? The answer given by the psycho-analytic school is that all these myths indicate a return to the original source of life, the womb of the mother. The sun every evening is immersed in the maternal water, often being threatened by dangers of all kinds, and is born again renewed in the morning. In many cases, as, for example, in the myth of Osiris, the hero is enclosed in a chest or ark for his journey across the sea; an inversion of the natural fact that the child floats in the amniotic fluid and that this is in the uterus. The chest or box is here a symbol of the mother's womb, as is the monster by which the hero is swallowed. Jung therefore considers that the meaning of this cycle of myths is clearly the longing to attain rebirth through the return to the mother's womb.

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[1] "Psychology and the Unconscious", p. 288.

[2] The parallelism of this story with that of Jonah and the whale is obvious.

But the necessity of in some way gaining entrance into the womb stands in the path of this goal. We are reminded of the words of Nicodemus: "How can a man be born when he is old? Can he enter a second time into his mother's womb and be born?"[1] One of the simplest ways appears to be that of impregnating the mother and so reproducing oneself identically, Jung remarks, but here the prohibition against incest interferes. Hence the myths of rebirth contain all possible suggestions as to how incest can be evaded. Though the woman sought and battled for in fairy tales appears, in some respects at least, always to be the mother, this fact is disguised by transforming her into another being or rejuvenating her, or making her disappear, as in the Swan-Maiden cycle of tales. The wonderful hero of the fairy tale, who overcomes all difficulties by his magical powers, is, like the mythological gods of old, one who has done that which is impossible to everyone else; he has regenerated himself through his own mother.

Jung discusses this whole theme in great detail in the work referred to above, insisting throughout that the fundamental basis of the "incestuous" desire does not aim at cohabitation but at rebirth—a psychic or spiritual rebirth which uses the symbols of physical birth for its representation.

There is undoubtedly a great deal of truth in this view, and certain aspects of it will be referred to later. For the present, however, it should be noted that such an interpretation of some of the visits of mortals to fairyland is not entirely satisfactory. If the whole aim is nothing but rebirth, why is fairyland usually such a beautiful and enchanting country? Why is there so much danger that the mortal will fall under its spell and have to remain there for ever? Moreover, in one type of story the mortal, when he does return to earth, does so only to die. Hartland[2] gives numerous examples of this type in connection with the supernatural lapse of time in fairyland. Usually the hero returns from what he considers to be a very short visit to fairyland, only to find that long ages have passed away during his absence and that all knowledge of both his family and himself has long since been forgotten. Sometimes he is able to resume his life upon the earth, but more often, upon tasting food, he crumbles away into dust.

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[1] New Testament, John iii (4).
[2] "The Science of Fairy Tales", Chapters 7, 8, 9.

A typical story[1] is that of the Tirolese peasant who followed his herd under a stone, where they had all disappeared. He presently came into a lovely garden; and there a lady came, and, inviting him to eat, offered to take him as gardener. He readily assented; but after some weeks he began to be homesick, and, taking leave of his mistress, went home. On arriving there he was astounded that he knew no one, and no one knew him, save an old crone who at length came to him and said: "Where have you been? I have been looking for you for two hundred years." Thus saying, she took him by the hand and he fell dead; for the crone who had sought him so long was death.

Such considerations, in addition to the fact that, in nearly all cases, it is men who are lured into fairyland in this way, might make us inclined to accept the Freudian view that the basis of all these tales is the incest wish alone. Any kind of anagogic explanation is scornfully repudiated. For him the "Œdipus complex" is the nuclear complex of every neurosis and likewise of all dreams and myths. He holds that the first and natural love object of the child is the parent of opposite sex, so that the son always loves his mother and is jealous of his father, whose place he wishes to usurp. Similarly, the daughter is jealous of her mother and wishes to have the father's whole attention. This Freud calls the "Electra complex", from the myth of Electra who took revenge on her mother for the murder of her husband. At the basis of these complexes he sees a definite incest wish, which, however, never becomes conscious owing to its being quickly subjected to repression because of our moral conventions.

If, now, the child's development proceeds along normal lines, his libido will, at puberty, pass smoothly over to some person or object in the outside world and he will be able to find there an independent existence. In many cases, however, this transference never takes place, and the developing personality is unable to escape from the parental influence. The whole matter is then repressed even more deeply into the unconscious, and even a feeling of rebellion and enmity towards the parents may be developed in order to conceal and over-compensate for the actual unconscious attachment, which, however, still finds expression in a symbolical form in dreams and phantasies.

Several writers[2] of the Freudian school have therefore endeavoured to interpret fairy tales from this viewpoint, and there is no doubt that definite incest symbolism does appear in the group of stories under discussion. The entrance to fairyland, is, as we have seen, very often a cave or a cavern, a door in the hillside, or, it may be a dark forest. All these are typical dream symbols of the female body and particularly of the sexual organs. Penetration leads to the beautiful garden of peace and joy, the original Paradise of man, the womb of the mother, symbolized as "Mother-Earth". A garden is, in fact, a very common symbol of love, as may be seen quite clearly in romantic poetry.

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[1] *Ibid.* pages 184-5.

[2] For example, Riklin, Abraham and Rank referred to above.

This symbolism is, in many respects, similar to a birth phantasy, except that the direction is reversed. In dreams of being born, the dreamer usually finds himself descending a narrow stairway or emerging from a dark passage of some kind. A dream of my own, which occurred before I had any knowledge of dream symbolism, appears to have a similar significance. I seemed to be standing on a hillside with my mother when suddenly I was carried on a landslide down through a rocky, winding cave. I expected every moment to be crushed against the roof of the cave, because it was very low, but I presently found myself on the shore of a primeval ocean, filled with strange, brightly coloured reptiles.

This latter symbol is interesting because there seems to be a fairly general association between individual birth and world creation, and hence ancient and primeval things. Water, too, is a common symbol of birth, as in the sun-myths mentioned above, a fact which explains why fairyland is often found at the bottom of a lake or well.

The traveller to fairyland thus returns to the original source of life, the womb of "Mother-Earth", which is not only the underworld, the land where the dead go, but also the place whence the living have come.[1]

However, in spite of these evidences of incestuous desire, it still remains extremely doubtful whether the primary love of the child for its parents has, at least in normal cases, any real sexual significance. Certainly the influence of the parents, and particularly of the mother, is of the greatest importance, but her rôle is chiefly that of protector, caretaker and supplier of bodily needs. It is only later, when the child's sexual tendencies begin to mature, that his love takes on any tinge of sexuality. Moreover, it is now generally believed that the real basis of dreams and neuroses is not some childish fixation, but some difficulty or conflict of the present moment, and that, in seeking for the cause in the distant past, one is only following the desire of the individual to withdraw himself as far as possible from his present perplexity or his present task. The obstacle in his path causes his formerly outflowing libido[1] to be stored up, until finally a regression takes place, causing a reanimation of more childish ways of adaptation. Elaborate dreams and phantasies are then produced, as forms of compensation for the unfulfilled adaptation to reality; but their sexual content is only apparently expressive of an incest wish, being a regressive employment of sexual forms to express a present need in a symbolical way.

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[1] A curious form of this close association between life and death is found in the numerous instances of dismemberment and revivification which occur in fairy tales. In the story of the Juniper Tree, for instance, a youth is cut up, cooked and served up to his father to be eaten. The father throws all the bones under the table, and they are collected by the sister, wrapped in a cloth and placed under the juniper tree. The soul of the boy flies into the air as a bird and is afterwards transformed into human shape again. There are numerous stories of this type, in all of which the parts of the dismembered person or animal are placed in some form of container, such as a kettle, box, cloth or skin, all symbols of the uterus. In the case of the kettle they are generally cooked. Many of the gods of mythology are dismembered in the same way, and afterwards resurrected. It appears to be a very widespread phantasy that the unborn child is formed by being assembled from separate parts.

Even in the stories discussed above, the fundamental desire appears to be the return to the peace and security of the pre-natal state rather than actual incest. Thus Adler considers that the incest problem is simply a symbolical expression of the desire to return to the mother for protection against the dangers and difficulties of an outside world. Its origin lies in fear. Freud even claims that sleep has this same function of escape from life, and points out that many people sleep in a curled-up attitude similar to the position of the fœtus in the womb. Of course, as a theory of the biological character and origin of sleep, this view cannot be seriously maintained; but it is quite possible that sleep may often serve this purpose, and we find many instances of magical sleep in fairy tales. Brier Rose, for example, sleeps on in her enchanted palace, encircled with impenetrable hedges of thornbushes (a symbol of the embracing or encircling mother), dreaming beautiful dreams for a hundred years, until she is at last rescued by the Prince.

An interesting literary expression of this attitude is Swinburne's "Garden of Proserpine"—this garden being itself, of course, the underworld, the land of the dead. The second and eleventh stanzas are particularly significant:

I am tired of tears and laughter,
And men that laugh and weep,
And what may come hereafter
For men that sow to reap:
I am weary of days and hours,
Blown buds of barren flowers,
Desires and dreams and powers
And everything but sleep.

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[1] "Libido" is, throughout this paper, to be understood in Jung's sense of the word.

From too much love of living,
From hope and fear set free,
We thank with brief thanksgiving,
Whatever gods there be.
That no life lives for ever,
That dead men rise up never,
That even the weariest river
Winds somewhere safe to sea.

Such a retreat into childhood is obviously a negation of all progress, and we not infrequently find people who demand mental and spiritual support from the parents long after the need for it should have been outgrown. Such an attitude may be found even among people who have left home and become outwardly independent, perhaps having homes and families of their own. In this case, the marriage partner is usually expected to become a substitute for the lost parent.

Perhaps more frequently, however, the retreat is purely a mental one. Refuge from life is sought in a world of dreams and phantasies where the dreamer can do, without difficulty, all those things which he is unable to accomplish in reality. I, myself, during the years of adolescence, formed, more or less consciously and deliberately, a very definite retreat of this kind, which I called the "Garden of Dreams", and which I peopled with fairies and spirits and ideal human beings who were often more real to me than the people in my actual environment. For many persons, religion provides a sanctuary of this kind, for here, as Jung points out, the regressive reanimation of the child's love for the father and mother is organized into a system. "The benefits of religion are the benefits of parental hands; its protection and its peace are the results of parental care upon the child."[1] It requires few difficulties in adult life to cause these memories to be reawakened.

However, experience clearly shows that to some individuals life appears far more terrifying than it does to others. While some will go boldly forward and conquer difficulties, others are constantly troubled, anxious and afraid, always daydreaming in some obscure backwash of life, always retreating in the face of the least obstacle. Their lives appear to be compounded of evasions, hesitations, compromises and excuses, by which they endeavour to avoid any real test of their powers.

Adler calls this attitude the "will-to-escape" and bases it upon the inferiority complex, which is formed in early childhood on account of the child's sense of helplessness and inadequacy. Originally, he considered that this feeling of inferiority was always founded upon some organic defect, but in later works he recognizes that difficulties in facing the world may also be caused by the unreasonable demands made on a child by a foolish environment, or, in fact, by any form of insufficiency, injustice or neglect, real or imagined. Of course, an immediate attempt is made to compensate for such an unbearable position by elaborate phantasies of power and magnificence and by striving towards a goal of impossible supremacy. The very height of this goal, however, defeats its own ends, because the contrast between it and reality serves only to intensify the individual's feelings of inferiority, so that a vicious circle is created from which there appears to be no escape. The attempt to compensate is accompanied by a permanent sense of failure to do so completely.

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[1] *Loc. cit.*, p. 99.

Some writers—notable Ferenczi—consider that, instead of this goal of superiority originating in actual experiences of inferiority, the reverse process takes place; the inferiority feelings are the result of a reaction from an exaggerated feeling of omnipotence. He bases this theory, first, upon the assumption that the state of the fœtus in the womb is one of ideal pleasure and satisfaction (rather a difficult point to prove), and, secondly, upon the fact that, even after it is born, an infant can usually obtain immediate fulfilment of its desires by crying. It has only to cry and solicitous adults will rush to its aid, so that the child begins to feel itself to be a real magician. This is the origin, he thinks, of the notion of magic signals and gestures.[1]

As the child grows older, however, it begins to find that its wishes are not always so easily satisfied. It is not so powerful as it had imagined. Hence feelings of inferiority arise, which, in an unsympathetic environment, may develop into a complex. It depends entirely on circumstances in the child's early life whether it develops a pessimistic or an optimistic outlook on life.

There is an important truth in this theory, which can be readily linked up with Jung's discussion of psychological types. He distinguishes two fundamental types of mind, the introvert and the extravert, and though there is possibly an innate basis for these temperamental differences, it is certain that the environment plays a very large part in determining at least the strength of the predominating tendency in each individual.

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[1] MacCurdy, in his "Problems of Dynamic Psychology", discusses Ferenczi's views, and, while accepting them as psychologically true, considers that the notions of returning to the womb, rebirth and so on are merely symbols, derived from adult knowledge, for man's general desire for comfort and security.

The extravert might be regarded as one whose original sense of security and power has received no very serious setbacks and who therefore approaches the business of living with a cheerful confidence in his own ability to succeed in all his undertakings. He feels at home in the world, and there is no obstruction to the outflow of his libido, which seems to be in direct contact with external reality. He is the true "child of Nature".

It is quite otherwise with the introvert. His attitude is primarily one of defence, negation, the protection of his personality from a seemingly hostile environment. It would seem that the primary shock of birth, the first banishment from Paradise, has proved more profoundly disturbing to him than it has to the extravert; the assimilation of the experiences has been more difficult. Beatrice Hinkle writes in this connection:

> These two elementary experiences, first, of the psychic impression of comfort (paradise) and, second, of fear (evil), appear to be carried together and stamped on the soul of a large number of persons. The last impression, the fear and terror, the danger to the self, appears in the emotional introvert type to overwhelm and dominate the primary sensation of well-being, the paradise state, and the emotion thus evoked continues as a more or less permanent attitude throughout life and becomes the model of reaction of the organism to all future demands of the outer environment.[1]

The extravert carries the primary feeling of paradise with him into the outer world and projects it upon the objects of reality, expecting the same happy relationship as he originally possessed in the womb. The introvert, on the other hand, has left his paradise behind and can but look back to it longingly. The mother is for him the great love object, while the outer world is a place of unknown terrors. His feelings therefore turn inward, bringing him into direct contact with the ego, and he cannot, for this reason, make that immediate and close contact with the object which is made by the extravert. His reaction to external stimuli is indirect, through thought, and this thought process must be completed satisfactorily before action can take place. His lack of feeling response to the external world, together with his intense self-awareness, produces that keen realization of inadequacy and uncertainty which forms the basis of the sense of inferiority so characteristic of the introvert personality.

It is therefore not surprising to find that, in fairy tales, those who are stolen away by the fairies, or who wander into fairyland, are, in almost every case, persons in whom definite feelings of inferiority may be assumed to exist. It is extremely significant, for instance, that there should be a widespread superstition that new-born babies must be protected not merely against the natural perils of their condition, but also against fairies and other supernatural beings, which are always on the watch to seize and carry them off, if they are left unguarded, leaving in their place one of the fairy folk, or a block of wood made to resemble the stolen child. Among the Greeks, witches are supposed to have great power in this direction, an interesting fact in view of Jung's theory that the witch is a symbol of the incest problem, the "terrible mother" who holds mankind in bondage. They seek new-born babes to suck their blood or to prick them to death with sharp instruments, often inflicting such injuries that the child always remains a cripple or an invalid. Similarly, the substitute for the stolen child which the fairies leave behind is usually a thin, withered, deformed creature, often sickly and ill-behaved. From cases of reputed changelings which have been recorded, it would appear that the children in whom this character has been ascribed were invariably deformed or diseased in some way.

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[1] "The Recreating of the Individual", p. 270. This view is interesting and, if regarded rather metaphorically than literally, is probably of value.

This fact in itself does much to explain the belief in changelings. Obviously it would be an excellent excuse for a woman who had borne a sickly or deformed child, an attitude which seems to be clearly expressed in the following poem, "The Fairy Changeling", by Dora Sigerson:[1]

Dermod O'Bryne of Omah town,
In his garden strode up and down;
He pulled his beard and he beat his breast;
And this is his trouble and woe confessed:

The good folk came in the night and they
Have stolen my bonny wean away;
Have put in his place a changeling,
A weashy, weakly, wizen thing.

He tells how he had tried to frighten the fairy away by various charms, but continues:

But my wife had hidden it in her arms,
And cried, "For shame!" on my fairy charms;
She sobs, with the strange child on her breast,
"I love the weak, wee babe the best".

However, from the child's point of view, too, the idea is significant, for a child with any kind of mental or physical defect is naturally oppressed with deep feelings of inferiority which might easily lead him to consider himself an unwanted alien in a strange land: while, on the other hand, the child with an inferiority complex may become sickly and neurotic and develop character traits as mischievous as those of any changeling. These characteristics are only the outward show, however; the real child is wandering among the joys of fairyland, seeking there the happiness which the real world denies him. Yeats tells us the secret in his poem, "The Stolen Child", where the fairies sing:

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[1] "The Irish Fairy Book", A. P. Graves, p. 241.

Come away, oh human child,
To the waters and the wild,
With a fairy, hand in hand,
For the world's more full of weeping than you can
understand.[1]

In the case of adults who find their way to fairyland, the motives may be various, but the real significance of their visits always appear to be of a compensatory nature, either because of the pleasure or the riches obtained there, or because it affords an escape from their real environment. The fact that many of the wanderers to fairyland belong to the poorer classes, being shepherds, peasants, labourers, and so on, seems to offer an explanation of their desire for escape and compensation. Some of the tales bear a remarkable likeness to a fugue, a state of mind which also arises from the wish to escape from an unpleasant situation.

For instance, Hartland[2] gives the story of a man who disappeared one day while looking after his sheep and cattle on the mountain. After about three weeks, by which time his wife had given him up for dead, he came home, and when she asked him where he had been for the last three weeks, he exclaimed, "Three weeks! Is it three weeks you call three hours?" He explained that he had been playing on his flute at a spot near the Van Pool, when he was surrounded by little beings like men, who closed round him until they formed a small circle. They sang and danced and offered him some small cakes to eat and he enjoyed himself so much that he quite lost himself.

In some stories of this type the hero is a farmer or farm-labourer who, while travelling with a friend or fellow-servant, hears sweet music and is drawn away into a fairy ring, where he sings and dances with the fairies for a twelvemonth, or sometimes a year and a day, after which time he can usually be rescued by his friends. He is always quite unaware of the length of time which has elapsed, and, in some cases, crumbles into dust upon again tasting mortal food.

Another legend, similar to the story of "Rip Van Winkle", tells of a horseman who, while riding over the hills, sees several old men playing a game with rushes. He ties his horse to a tree and watches the game for a few minutes, as it seems to him, and then turns to depart; but his horse is a skeleton and only rotten bits of the saddle and bridle are left. He seeks his home, but that too is gone, and he lies down and dies broken-hearted.[1]

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[1] *Cf.* also the "Pied Piper of Hamelin", where the children are led away into a mountain by the enchanting music.
[2] *Loc. cit.*, pp. 166-7.

Stories in which treasure is obtained usually depend upon some act of service rendered by the mortal (sometimes under compulsion) to supernatural beings, but this is not always the case. The tales are usually linked up with legends of departed heroes who sleep in a cavern beneath the mountains until the time comes for them to awake and deliver their country once more from its oppressors. Such tales appear to be mainly of German and Slavonic origin, and in these regions there are several mountains which are particularly regarded as being the resting-places of sleeping hosts. Mount Blanik, in Bohemia, is one of these. Within the lofty halls beneath it, the Bohemian hero, King Wenzel, sleeps with his knights until some day the dire need of his country shall summon him to its aid.

One day, a smith who lived near the mountain was mowing his meadow, when a stranger came and bade him follow him. He led the smith into the mountain, where he saw the sleeping knights, each seated upon his horse. The stranger then brought him tools and told him to shoe the horses, but to beware of knocking against any of the knights. However, as the smith was shoeing the last horse he accidentally touched the rider, who started up, crying out, "Is it time?" "Not yet", the stranger replied, and the knight slept again. When the task was finished, the smith was given the old shoes as his reward, and he returned home. He was astonished to find that he had been away for a whole year; and when he opened his bag he discovered that the old horseshoes were all of solid gold.[2]

In another tale,[3] a peasant, while in quest of a straying horse, finds the mountain open and enters the hall where the knights sit sleeping round a large table of stone. Every little while, one of them looks up and asks, "Is it time?", but on the chief shaking his head he sinks again to rest. While the peasant is thus looking on in astonishment, he hears a neighing behind him, and finds his horse grazing outside the cavern. On arriving home, however, he finds his wife in mourning, for he had been absent for a whole year.

In this latter case there is no act of service and consequently no reward; but treasure is sometimes obtained without any service being rendered.

A young girl of Corinthia one day left a hayfield to climb the Schonofen, and as she reached the top she became aware of an open door in the rock. She entered and found herself in a room where two black horses stood at a fodder-trough, feeding off the finest oats. She put a few handfuls of the oats into her pocket and passed into a second room where she found a chest on which lay a black dog. Near him was a loaf of bread into which a knife was stuck. Cutting a good slice, she threw it to the dog, and while he was busy eating it she filled her apron from the treasure contained in the chest. Meantime, however, the door had closed, so she lay down and slept.

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[1] Hartland, *l.c.*, p. 178.
[2] Hartland, *l.c.*, pp. 170-1.
[3] *Ibid.*, p. 171.

> She awoke to find the door wide open, but when she reached home she was amazed to learn that she had been absent for a year.[1]

The presence of horses in the last three tales is interesting, in view of the fact that the horse is a very common libido symbol, partly, Jung thinks, of maternal and partly of phallic significance. It represents the libido which is repressed through the incest prohibition. Thus we find the closest connection in fairy tales between the hero and the steed upon which he rides. According to Jung,[2] the hero and his horse represent humanity with its repressed desires. The horse often has human characteristics, particularly powers which belong to the unconscious, such as seeing phantoms, prophesying and so on. Riding frequently has an anxiety significance, particularly of a sexual nature, arising from a conflict between some repressed impulse and the moral character of the individual. In short, then, the magic steed which bears the fairy tale hero wherever he wishes to go, represents his own unconscious impulses and desires. There is an important truth in this symbolism.

In one group of tales, somewhat similar to the last one narrated, a curious incident occurs. Beneath the Rollberg, near Niemes, in Bohemia, is a treasure-vault, the door of which stands open for a short time every Palm Sunday.

> A woman entered one day with her child and saw there a number of Knight Templars sitting round a table gambling. They did not notice her, so, after setting down her child, she helped herself from a pile of gold lying near them. Beside the gold lay a black dog which barked from time to time. The woman knew that the third time it barked the door would close—(an interesting parallel to the intuitive and unmediated knowledge which often occurs in dreams)—and she hurried out. When she thought of the child it was too late; she had left it behind and the door was closed. A year later she returned at the hour when the door was open, and found the little one quite safe and well, holding an apple in each hand.[3]

Usually in these tales, a beautiful lady or a kindly old man (signifying, of course, the father or mother) comes and cares for the child during the mother's absence.

It would appear that the child here represents the childish aspect of the personality, which remains attached to the mother and longs to return to her. The woman returns to the mother's womb and becomes a child again, but in a surrogate form, by means of her own child. Such an objectification of parts of our own feelings in a distinct personality is a not uncommon feature of dreams, and hence we may expect to find the same thing happening in fairy tales. Other examples will be noted later on. It is simply an extension of the general tendency to symbolize our feelings by means of external objects, but obviously it forms an even more effective disguise, since, by thus creating separate personalities out of split-off portions of our own personality, we are able to repudiate and so disclaim all responsibility for part of our own mental content. Probably the reason for this form of symbolism in the present instance lies in the fact that, as it is less natural for the daughter than for the son to be attached to the mother by strong bonds of affection, such an attitude requires to be very closely concealed.

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[1] Hartland, *l.c.*, p. 175.

[2] For a detailed discussion of the symbolism of the horse, see "Psychology of the Unconscious", pp. 280-3, 308-16.

[3] Hartland, *l.c.*, p. 176.

A similar explanation would appear to account, at least in part, for the numerous stories in which human midwives are carried off to an enchanted palace, usually underground, and obliged to minister to fairy women who are in need of their services. These women are often, themselves, really humans, who have fallen under the spell of the fairies in some way and been compelled to remain among them. They usually warn the midwife against eating or drinking anything while she remains in fairyland lest she, too, should become a captive there. In a Swabian tale, the Earthman, as he is called, apologizes for omitting to offer food.

> In this story, the midwife begged that her husband might accompany her, as she was afraid to go alone with her summoner. This was permitted, and the Earthman showed them the way through the forest with his lantern, for it was night. They came first to a moss door, then to a wooden door and finally to a door of shining metal, opening on to a staircase which led down into the earth. The guide then led the midwife into a large and beautiful room where the earthwife lay, and when the object of her visit was accomplished, he thanked her very much and said, "You do not relish our meat and drink, wherefore I will bestow something else upon thee." He gave her a whole apronful of black coals and, taking his lantern again, led the woman and her husband home. On the way, she quietly threw away one coal after another, but the Earthman said nothing until he was about to leave them, when he remarked, "The less you scattered the more you might have." When they reached home, the woman shook the remaining coals out upon the hearth, but, behold, they were all glittering gold pieces.[1]

This incident of the apparently worthless or trivial gift becoming something of great value is a very common feature of these tales, while, on the other hand, when the reward given seems to be something of value, it usually changes into something worthless, such as pebbles or withered leaves. No doubt man discovered long ago that all that glitters is not gold, and that things are not always what they seem; but this peculiarity of the fairy gifts probably betrays also his uncertainty as to the real value of treasure thus obtained, as will be shown later on.[1] The danger of eating fairy food has already been mentioned and probably arises from several factors. Since nutrition is essential to life, and since the instinct of self-preservation is one of the fundamental instincts of man, it is natural that superstitions regarding food should figure largely in his customs, dreams and phantasies. Amongst almost all peoples the duty of hospitality has received special emphasis, while it has often been held to unite the recipient by special ties to the giver. Even merely joining in a common meal has frequently been regarded as constituting union of a very sacred kind—a belief of which our modern wedding breakfast and wedding-cake is a survival. Hence to partake of food in the land of spirits is to proclaim one's union with them and to renounce the fellowship of mortals. Since, however, these tales symbolize a return to childhood and to the care of the mother, the magic food must symbolize the food of childhood, which is the mother's milk—(often represented, also, as nectar or water of life)—to partake of which renders one once more an infant, wholly devoid of freedom and independence. Moreover, Freud holds that eating, in dreams, signifies sexual hunger, so that the danger here seems to be that of yielding to the incest wish, the childish longing for parental love. It may be either the mother or the father which is the object of affection in these tales, because, since the Earthwife represents the mother (and the name is particularly significant in this story), the Earthman who summons the midwife must be the father. Frequently the summoner carried the midwife away on a horse, the sexual significance of which has already been noted. The child which is born is, therefore, in a sense, the mortal woman's own child, obtained through the father, the incest problem being overcome by substituting another woman for herself. She therefore reproduces herself and so returns to childhood by means of a cleverly disguised incest with the father. (As in most dreams and phantasies, the majority of the symbols employed are greatly over-determined by means of the process of condensation.)

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[1] Hartland, *l.c.*, pp. 39-40.

(*To be continued.*)

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[1] Reference should also be made to the Freudian theory of the connection between gold and offal, based on his doctrine of anal-eroticism. It is claimed that the child obtains sexual pleasure from the act of defæcation and hence places great value upon its products. Jones goes so far as to call the fæces "the child's material gift par excellence, in return for all the proofs of love it receives". ("Papers on Psychoanalysis", p. 675.) This theory has been pushed to ridiculous extremes, but probably contains a certain element of truth. Certainly the ideas of gold and offal are very closely connected in numerous myths and fairy tales, as, for example, in the story of the ass which, at the word, "Bricklebrit" would begin to drop gold from before and behind. *Cf.* Silberer, "Problems of Mysticism and its Symbolism", p. 418.

MUSIC AND SCIENCE AS MEDIA OF RATIONALITY.

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"Music is a loftier Revelation than all Wisdom and all Philosophy."—Beethoven.

This paper is the result of investigations and research extending over many years, undertaken after a training in Art at the Melbourne National Gallery, in Anatomy at the University, and in Music at the Conservatorium under Professor Marshal Hall, whose ideas on music were unusual and ahead of many, if not most, of his contemporaries.

Questions began to arise in my mind and ask for solution. Why, for instance, is the contemplation of a beautiful sunset so stimulating? What is it behind the actual matter that one sees, that seems to give one new energy? Then, one dined with freshly cut flowers on the table that one saw with one's bodily eyes. What was the mysterious something else that was there also, clearly perceived by some other faculty? What was the mysterious "atmosphere" that one perceived in the bush, quite in addition to the forest trees, shrubs and flowers and fresh scents? Then one attended a great orchestral concert, under the baton of our great conductor. Why, in addition to the sensuous and emotional stirring and enjoyment that one experienced at the time, was one so refreshed and stimulated for one's ordinary work next day, that one awoke clamouring for work, the more strenuous the better? There was a large chimney of the Electric Lighting Company within range of vision. Why, when volumes of smoke issued from this, was one so aware of the energy behind the smoke, that one wondered why so much energy was allowed to be wasted?

These and many similar questions pressed for answer, and one sought for many years for the solution of such problems.

But the immediate origin of the paper was Professor Hartung's lectures in September, 1930, on "The Ultimate Constitution of Matter", which were full of thrills to an artist, and helped to make many things clear.

As the scientist studies the physical nature of the universe, so the musician studies the spiritual nature of creation, and both studies are equally objective.

"It is because the appeal of the Universe is primarily to the artist in us, that art is obviously the first and in some sense the most adequate interpretation of it. The truth which cannot yet, or by us, be told in terms of the intellect is expressed, if anywhere, in music, poetry, architecture and other arts."

"The scientific view of the world", to quote Dean Inge, "is an intellectual construction based on an abstract view of reality, convenient for the prosecution of those studies with which natural science is concerned. It is already charged with value judgments which are the more confusing because they are not recognized as such."

Thus physics reduces matter ultimately to protons and electrons, positive and negative electricity, and says plainly that it does not know what these are. It postulates something which it calls energy, and which can be measured. According to Einstein: "Matter and energy are interchangeable. As a body gathers speed its substance is changed into energy." How far other scientists support this view I do not know, but it seems to form a good connecting link between the viewpoints of scientist and artist and, I think, the Catholic philosophers of the Middle Ages.

The scientist studies phenomena through the medium of his senses. He gathers numerous "facts" about his subject by close observation and analysis, and, by reasoning from them by means of his intellect, tries to form a generalization or hypothesis of their relations with one another and the material universe. From this he often goes further, and tries to build up an idea of the ultimate constitution of this universe. But beyond the bounds of his senses, these conceptions are purely intellectual abstractions, and exist only as a system of thought. This I gather from the statements of scientists. His study is concerned ultimately with Energy, not with Life.

The artist begins also by studying the phenomenal world through his senses. He employs no instruments to measure things, though he may aid his senses by microscope or telescope. His observations are all made and measured by his own faculties. But his training is as objective and accurate, and perhaps even more severe than that of the scientist. He deals, however, not only with form and quantity, but with "quality", and ultimately with Life as well as Energy.

But he not only trains and develops his senses and the perceptions proper to his senses. He also trains a finer organ of perception which can only be called spiritual. Thus he begins slowly and I think very gradually to enter on a direct perception and apprehension of that which lies behind and within phenomena. The more highly developed artists become what we call mystics or seers, and to this perception they apply the same severely critical training as to their sensual perceptions, analysing and criticizing on this plane with as much cold-blooded care as any scientist.

By means of the particular medium through which he works, he re-creates and expresses what he has seen. Poets like Wordsworth and painters like Turner and Corot saw the eternal energy which lies behind matter, and managed to express this for us. Turner, for instance, in his "Fighting Temeraire" has painted ship, sky and sea. But in his great seascape he has also managed to convey to us his perception of the eternal energy of these things. Corot paints forest scenes, and somehow depicts also the mysterious life that is there if we can only see it, and many must have returned to nature after seeing his pictures with a new power of vision of their own.

These artists describe the outward form clearly and accurately, and contrive also to represent the inner life behind the form. Great portrait painters like Velasquez and Rembrandt and Titian, and, among moderns, Sargent, have done the same with human portraits. They manage to express the inner as well as the outer man. To do this they must develop their own powers of accurate inner perception, which is really a spiritual faculty.

The musician goes further. His ultimate study is not phenomena—though he studies the world around him—but reality. He deals directly with the Energy and Life which seem to create and build up the world. But these are not intellectual abstractions to him, as they are to the scientist, but objective realities of which he is keenly aware, and to whose existence he may become keenly, consciously and continuously alive. They are as objectively perceived by his inner perception as phenomena are by his senses, and can be as carefully and accurately studied. Like most mystics, his earlier experiences in this world of reality are apt to be overpowering, and arouse ecstasy and rapture. He is lifted into a world beyond the bounds of sense, and this deprives him for a time of his consciousness of the ordinary world around him. But further experience settles his mind, and he is able to adjust himself to the larger world, and to observe quietly and carefully, and, by means of the spiritual language at his command in the case of composers, to convey his observations and his experiences to the minds of others.

His concern is with the deepest realities we know. With Energy which he perceives in the material world. Wagner's and Beethoven's descriptions of storms are wonderful pictures of the Energy let loose at such a time. The Vital Energy of the world is also thus presented to us. Many English composers excel in representing these realities. The point is that the musician directly perceives these, which are actual "facts" to him, just as much as the "facts" which science studies. Most musicians describe at the same time the feelings aroused in them by their perceptions, so that one has something at once objective and subjective. One good example of this is Mendelssohn's "Fingal's Cave" Overture, a wonderful description of a boy's perception of the life and energy around him in that wild spot, and his joyous reaction to it. Here there is no storm, but the power, repose and harmony of a halcyon day. He was seventeen when he visited the Cave; and it is literally an inspired work. McDowell's "Sea Pictures", Elgar's Sea Songs, and many modern English nature songs also give us musical pictures of these experiences. Debussy and Ravel also wrote many similar works.

When one comes to musical representation of man, the musician goes deeper than anyone else. The whole rich drama of man's inner life is his subject and theme. The Vital Energy which man shares with the Vegetable and Animal world, and the Spiritual Energy peculiar to him as Man, in all its combinations and antagonisms is presented to us by great composers, who were past masters of psychological analysis. Man from the lowest to the highest is revealed to us. Jazz and the disturbed syncopations of modern music depict reality no less than the high harmonies of Beethoven, Bach and Cæsar Franck. The greatest musicians have also succeeded in depicting the Divine Spirit which man perceives in his highest moments—the reality of Realities. Listening to some of their music one gains glimpses of that which lies far beyond our senses, the perception of which is the deepest experience possible to us.

Thus, what the scientific philosopher postulates as an abstract possibility or hypothesis is to the musician an observed reality, a fact of life. The musician should therefore be able to build up a sound healthy philosophy in accordance with his knowledge of himself, and of the universe around him. He brings facts and realities seen through his spiritual faculties of perception to the bar of his reason, and judges of their value just as a scientist does the facts of phenomena perceived through his senses. But reason alone cannot reach the things he sees, though in studying them his mind works quite as logically as a scientist's, and the knowledge gained by science must be of unfailing interest to him.

I think, then, that Beethoven is right in claiming music as a finer medium of rationality than science, though it may be very long before this is conceded by men of science, who are apt to think that their method is the only well-judged, critical, and unprejudiced way of studying the Universe. But it places the final means of weighing and measuring the realities of life within man, and beyond the power of any instruments, however great or delicate. However wonderful the Universe as seen through telescope or microscope may be, the Universe as seen through man's finer perceptions is still more wonderful. However delicate and accurate the scientist's means and methods of measuring and weighing quantity with his instruments, the trained artist's summing up of both quantity and quality is greater, and his weighing of the objects of his perception can be quite as cool and clear-headed, and not necessarily disturbed by his emotional reactions. Even when his gaze is turned inward, and he describes his own emotional disturbances, or the struggle between the different energies which compose his being, some coldly observant element in him seems to keep aloof from any turmoil or feeling, and to observe and judge coolly and accurately the experience that has come to him. Beethoven's note-books show how he altered and re-altered his music, until he found the simplest and most complete expression to suit his needs.

The musician describes things from a different level to the scientist. He goes further and deeper into the nature of the world, and he has a language much more fitted to describe reality than the intellectual language of speech; for his language is much more pliable and comprehensive. Thus where science can only represent energy as an abstraction, music represents it as an actual substance. The musician here joins hands with the Catholic philosophers of the Middle Ages with their talk of 'substance' and 'accidents'. To the man of science substance has a different meaning, as something that can be touched and handled by our bodily senses. To the mystic, philosopher or artist, it is rather the intangible, imponderable Energy and Life which constitute the real substance of things, and this substance is clearly perceived and felt by his inner and more spiritual senses, though imperceptible to his physical senses.

It seems to me that the study of music throws much light on their ideas of sacraments, and especially on their idea of Transubstantiation. Recently Bishop Barnes, who is well known as a scientist as well as theologian, seemed to think that he had put an end to discussion by saying that if there is a change of substance there must be a chemical change in the bread and wine; and as no chemical change could be detected, then the idea was foolish superstition. But the schoolmen did not use the word substance with the meaning that it has for a scientist; but rather as representing the real essence or life that lay behind the elements as seen by the eye of sense. Leaving apart any question of the truth or untruth of the idea, it certainly lies quite beyond the province of scientific investigation and knowledge, in that inner world of reality to which music gives the right of entry.

The musician, moreover, lives in a world of energy which he perceives behind inorganic matter, of Vital and Spiritual Energy in the organic world of living things and beings around him, and his own life and energy are constantly stimulated and fed by these realities, which have nothing to do with time and space; and he can already enter on the world that belongs to eternity and not to time. The greatest musicians all seem to perceive the unity and harmony of the underlying facts of life, and to come eventually to rest in these things with a serenity that seems to belong ultimately to mystic perception. Where they seem to differ from other mystics is partly in what we may call their familiarity with, and their depth of knowledge of these realities, and their power of accurate description and expression of them in the plastic spiritual language at their command. Certainly music gives us a new heaven and a new earth in which man can find satisfaction for some of his deepest desires and needs, and many answers to his most profound questioning.

As it deals with realities lying beyond the bounds of time and space, it gives his mind an extraordinary sense of its own essential immortality, when it lives in correspondence with these greater realities, and of the grandeur and dignity of his possible destiny if he progresses towards its fulfilment. However, no student of modern music can fail to see how easily he can also regress, and recede to the lowest depths from which the evolution of the race has brought him.

Art seems to take the torch of knowledge from the hands of science where science relinquishes it, as "Life" enters the lists; and a philosophy which does not embrace both realms of knowledge must be incomplete and unsatisfying. Music is a revelation of a greater and more wonderful world than man has before or so clearly perceived or described; and its discovery belongs to much the same period of time as the discoveries of science. Perhaps the realization of this conquest of a new world by man is one of the things awaiting the world in the near future. If that occurs, then many will share the wonder and deep satisfaction that seem only known at present to comparatively few. But those who know it, know that they have found the deepest and truest knowledge open to them, and they would willingly share its delights with others. But this necessarily implies that those who would share it must give their own spiritual faculties a chance, and cease to deny them the right to exist. To many people this would imply a revolution in their whole attitude towards life and its possibilities. It seems to me that such a change and spiritual renaissance is about due, and art would seem to be the natural leader of such a development. It was Rodin who said, in discussing economic difficulties, that the artist's way was the only one that had not been tried, and that possibly the basic solution lay in that direction. Jung, too, said "that an artist's world is a world of solved problems". Certainly the great musicians are amongst the few who succeeded in solving the problems that life presented to them, and in getting what they wanted from life. But the majority of people seem quite unable to do this, and are unhappy and unsatisfied in consequence. But then the big musicians stood on their own feet, and were content to work and struggle for what they wanted, and not merely to ask someone else to give it to them, like children crying for help and sustenance.

The world thus revealed to us is one of strict order and full harmony, which, though challenging man, is not antagonistic to him. It challenges him to exert his powers to the full, and to master it where mastery is possible, and calls him to abandon himself with trust to those Powers which, while beneficent, are of a higher degree than his own. It is a world of strict cause and effect, in which he must inevitably bear the consequences of his own activity, and in which the forces let loose by men act and react on each other in a way no less inevitable than the actions and reactions of the physical world revealed by science.

The Greeks declared this in their great dramas. Wagner has reiterated it again and again in his music-dramas, which cover almost the whole range of human relationships. His dream was to restore to the theatre its place as a teacher of what was worthy or base in our relationships with one another, and to those who trouble to study them, his operas are a mine of wealth. He saw no less clearly than Jesus the great law of the survival of the fit in the kingdom of the spirit: "Unto him that hath shall be given, and from him that hath not shall be taken away even that which he seemeth to have."

The condition of spiritual enlightenment shown by the greatest musicians has nothing spasmodic or fleeting about it.

It is a serene, steady, persistent condition in which the whole man functions harmoniously and with ease. It is true that there is almost always a period, sometimes a long one, of seemingly appalling effort and much suffering; but their conquest and victory are proclaimed in no uncertain language by men like Handel, Beethoven and Brahms, though more modern music from Tschaikovsky onward often proclaims no less decidedly their author's defeat and restless despair. It shows us a fair field and no favour, in which the prizes can be won by any who care to fight for and claim them. But we have to play our own game, and no one else can give us what we want—except the Greater Powers around us. In this spiritual game one can find all the adventure, excitement and strenuous exertion that one desires, above the deadly monotony and sameness to which civilization tries to reduce man's ordinary existence, except when some crisis breaks in upon him. There is the delight of constant change and stimulating danger, and one never knows what awaits us around the next turn. All the explorers of this world tell of tremendous dangers that they encountered, to meet which they had to exert themselves to the utmost, and their victories were full of proud dignity, because attained at so great a cost. But there is no uncertain note in their songs of triumph and joy. They played a great game and won it completely, entering on the full freedom of manhood, and their works are full of life and vigour.

As illustration of the power of music to present states of consciousness which are otherwise difficult or practically impossible to more than hint at in ordinary language, one might quote Marshal Hall's analysis of the Finale of Beethoven's C Minor Symphony. Here Beethoven describes the conquest of what he calls "Fate" after a prolonged and bitter struggle, and the help of the higher beneficent Divine Power, which he describes in the slow movement. "Victory rolls in upon us with deafening irresistible tones. A triumphant pæan lifts itself from earth to heaven. A song of joy, of hope, of brotherhood, of proud and sober triumph! That which in the nature of things is unrealizable, the poet has here convincingly realized for us—the victory of good over ill, of happiness over misery, of righteous power over weakness and ineptitude. Listening to these strains our human frailties seem to drop from us, and we become heroes, gods. Trampling the powers of darkness underfoot, we stride onward to our everlasting Valhalla."

In spite of concert-hall, gramophone, and radio, these explorers of the inner world have not yet fully come into their own, but when they do, men will learn more of the value of their own spiritual energies, which are at present largely ignored and unused; and they will be able to build up a philosophy which covers the whole of life instead of the partial views at present extant.

I will close with a quotation from an article by Count Keyserling on "The Animal Ideal in America": "Inertia is the law of matter as opposed to spirit. Every organism is on the one hand an essentially responsive being; its life evolves in response to stimuli and is to that extent conditioned by the external world. On the other hand, every organism is a being which lives in its own right as the expression of a qualified autonomous life-force. It is impossible to explain any phenomenon without recurring to both of these factors, which are essentially independent of each other. But the autonomous life-force in the case of all plants and animals is roughly speaking a constant factor; it manifests no more initiative than does heredity with man. The latter's problem is different. In man the life-force which is autonomous everywhere can become focussed in the conscious, endowed with free imagination. And although what I said of the animal organism holds true of man, *viz.,* that the direction of his life is determined by the stimuli that it responds to, yet personal initiative plays the decisive part. It does not play a decisive part along the lines of his animal life, but wherever specifically human problems arise, wherever the meaning of facts seems more important than the facts themselves (as it does in all properly human issues), the initiative of the spirit, and not the pressure of the surrounding world, is finally decisive. And the higher man rises as man, the more important does this meaning quality become.

"We Europeans have realized that mere intellect, if developed at the expense of life, becomes its enemy, bound to destroy it as a quality first, and eventually as a fact. The creative powers atrophy. But American technicism presents a still greater danger. If only business counts (I use the term in its most general sense), then none of the purely human powers, as opposed to the animal forces, have any chance to grow. And since the life-source of man lies in the spiritual, this must lead to physical devitalization."

This statement of Count Keyserling covers a profound and little recognized truth—that man's physical welfare is largely dependent on his spiritual development. According to Dante, who follows Aristotle's conception, the soul, though one and indivisible, has three main energies: The Vegetative, which preserves the health of the body; it will be remembered that scientists call the nervous system which controls the unconscious working processes of the body the Vegetative Nervous System. The Animal, by reason of which he experiences pleasure; and the Spiritual, which he alone possesses, which distinguishes him from all other created beings that we know, and which makes him a rational being and capable of happiness. Man is not merely an animal or a mental animal; he is a spiritual animal—a human being—and his full health depends upon the development in due proportion of each of these energies. Where his spiritual energy, which is his strongest endowment and force, is not fully developed or properly maintained, his mental and bodily forces are apt to become devitalized and unable to maintain their health. It is possibly this fact that lies at the bottom of so-called miraculous cures, faith cures and spiritual healing, which are at present very little understood. It is possible that the reanimation of the spiritual nature revitalizes the body, and thus effects a cure. One often notices that a purely physical illness will follow long continued neglect of the spiritual element, during the pursuit of animal pleasures and a good time. This may be a mere coincidence, but it is worth noting, as there may be a connection between the two happenings.

There can be little question that man's recent almost exclusive attention to physical science, and his attempts to build a philosophy of life on knowledge gained by that alone, have tended to lead to his spiritual bankruptcy. One can see numbers of spiritually bankrupt people who are mastered by the material and animal forces of life, and have lost all free initiative and are sick in body and mind. Until they recognize their native spiritual endowment and regain their free initiative, the body politic will not regain its proper freedom, and the economic situation will hold man as its slave, instead of his being, as he should be, its master.

Since music gives him knowledge of his spiritual resources, both within and without himself, it is the finest medium of rationality, and one of his most practical assets, and at a crisis like the present, one of the most valuable.

ASPECTS OF THE METAMORPHOSIS OF MEANING.

By P. F. Irvine, B.A., LL.B.,
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Aware of the wide world about them struggling with almost every conceivable problem, the Lilliputians of 1933 have begun to doubt the conventions and orthodox beliefs which their fathers gave them in all sincerity. Perhaps the scientific spirit of the age has most to do with the creation of this new attitude of doubt, but the aftermath of the Great War in its turn has crystallized a growing potentiality into an actual fact. One cannot assume that there is anything inherently bad in the attitude of doubt. Indeed, in an age of intellectual adventure and vast scientific discovery, it behoves liberal-minded thinkers to look for a philosophical issue of that adventure and that discovery, an issue which may be a good and natural thing to know and to believe.

I propose very briefly to refer to several considerations which relate to the objective which we may thus set ourselves to seek:

1. The function of words in relation to thought.
2. The tentativity of meaning.
3. The meaning of man the individual in relation to metaphysical reality.

1. The Function of Words in Relation to Thought.

It is perhaps very difficult even for reflective persons to realize the part that language plays in obscuring reality from our view, and in this I do not mean "reality" in terms of any body of metaphysical science merely, but the reality or realities which form the world of individual living beings—indeed, a far more vital sphere. We have begun in this generation, it would seem, to think in words and ideas which are closely related to words rather than in things and ideas which have the intimate colour or association of things. May I quote an example which will illustrate what I mean? We hear today in the midst of an economic depression a cry about poverty-stricken people where "poverty" refers to a state of lack which would be a state of plenty and comfort in many other countries than Australia: it lacks in the minds of many people who use the term the pictures and intimate associations which it would conjure up in the minds of people who would use it normally. Poverty may be cried over the housetops, but is it poverty that the people are really talking about? Then, perhaps, there is that other class of people who in good and bad times sit in their comfortable houses and offices and council chambers legislating for the needs of the poor and destitute. Few of such people have seen the squalor and the spiritual degeneration of the lives of the poor: few have realized the goodness which is oppressed by it and the good achievement which is frustrated by it. What would you suppose the class of people I speak of connote by "poor and destitute"? I should imagine very little more than words, bare words, coloured by petty incidentals of poverty. Yet countries are governed by such people, and even educated by such people in schools, nay, perhaps, even in universities.

So much for the men of affairs who live lives determined by a limited experience of what the words they use mean. I would suggest that even the savants have limited experiences of true meaning. Meaning is not to be found only in dictionaries, nor in tomes of philosophy, nor in specialist works. There is more meaning to be gleaned possibly from "Alice in Wonderland" than from all the metaphysics from Plotinus to Kant. Wisdom is an elusive prize which all the ideologies of the last century have not received. Ideologies are founded upon words and particularly upon the dictionary meaning of words. They produce a precision of understanding within a limited experience, necessary to a point, but used by their adherents as a basis for opinion and action outside the limited sphere in which they are nicely applicable. Hence also you will find scientists who dabble in theology, theologians who know little about truth and are afraid of it, economists who prescribe ethical standards, and the whole horde of them in their own estimation is a little more omniscient about the solution of all our difficulties than our judges a century ahead will feel disposed to grant them.

What is the moral of all this but the necessity of cultivating a knowledge of the relative importance of one-sidedness and many-sidedness. In the century ending in this year of grace 1933 there has been disclosed to us vast scientific discovery, for the invention of man has been fruitful, and there is more information available to man than ever before. What has been the result but to force men to specialize in branches of knowledge in which they may attain great precision, but at the expense of not attaining to a wisdom that a many-sidedness alone can produce. The honest jack-of-all-trades has handed his power to the master of one. Our judges a century hence will say whether this course has been wise. One a little begins to doubt it even now. There is a general feeling in the minds of most thinkers, unconsciously enough in a sense, that the deductions that they make are based upon all the information which the world's mind, if I may use such an expression, has; whereas the information of which they have true experience is a small fraction of that, nay, even a very small fraction. In short, specialization has brought evils into spheres of learning quite apart from those of affairs, such as commerce and industry. More and more must we understand that an exact knowledge of economics, or even of the classics, for example, will not make a mind full of wisdom until that exact knowledge is associated with a mind which is furnished with wide sympathies, a colourful outlook, and the ability to conceive pictures rather than bare ideas. One-sidedness must give place to many-sidedness, and in this must we contend against that eminent philosopher, Count Hermann Keyserling.

Perhaps there will be many who will quarrel with this view. The fact remains, however, that learning has produced during this distraught period, as yet, very little inspiration and much disputation, when it has not, as a matter of fact, retired into its snail-shell from utter ineptitude and inability to cope with a situation of which it can understand but a hundredth part.

The simplicity of example may perhaps emphasize the position. The learned in this age are perhaps like the men who construct a building. There is a professor of plumbing and a professor of bricks and mortar, both of whom know the details of their own departments down to the very atom of the materials they use. There are theological and clerical hod-carriers running to and fro with all sorts of shapeless lumber, and scientists without number measuring this elevation and that. What is the good purpose served if none of them has an architect's brains, and they all, from being born in an age of information, feel they have.

Are we not apt, then, each to place his own special knowledge out of its true perspective with all other bodies of knowledge, and through lack of experience of them to exercise judgment upon matters which are determined by all knowledge? We must bear in mind that meaning is not what we find in our dictionaries, but something far subtler, which is only nicely realized by a mind finely attuned to experience generally. The savants and the people both have spent a century learning from words rather than from the many colourful experiences which may be found all around them if they turn their eyes from the printed page. If we were a little simpler perhaps we would be a little wiser.

2. THE TENTATIVITY OF MEANING.

Once we are to recognize that words are not meaning, but only a makeshift representation of meaning made by man, orthodox theologies and philosophies will start a little to crumble away. We realize that meaning from one point of view is tentative, and from another point of view that word symbols become ineffectual to represent the meaning in its newly evolved form. Think a little of the word "heaven". The world has ceased in the main to conjure up pictures of angelic bands and wings which at one time in the minds of the people must have had a real importance. The world is also loth, in the main, to think of a physical resurrection of the dead, which a well-known modern painter has even thought fit to parody in terms which, although they shock convention, bring home to us a truth. Indeed, the whole series of conceptions of Heaven and Hell have undergone a complete change of which our ancestors in the churches would not have approved. The evolution of knowledge has presented to most of us the utter senselessness of a resurrection of the dead in many of the forms in which the church taught it. Some of us doubt even the spiritual resurrection as the churchmen of some orders are wont to teach it today. We must learn to recognize the principle of the 'tentativity' of meaning, and I include in meaning here the symbols by which it is expressed. Again, permit me to illustrate: The Commandment says: "Thou shalt not steal." That phrase should mean to us today something much fuller and richer than was understood by the early Jews.

We forget that the relation of man to his environment may be misconceived by us, for the 'tentativity' of meaning which applies in one case may quite easily apply in another. The rules of logic would even suggest that it applied in every case.

We have been nurtured for centuries in the belief that each man was a separate entity apart from every other man. Why, we do not quite know, unless it was because primitive man and, before him, the animal were primarily selfish, looking out upon a world which was pre-eminently external. It may be that religions moulded us to that belief, but I think it to be more likely that man, misconceiving his own position, moulded religions. We hear constantly throughout history such things as the angel infancy of man and his personal resurrection into Heaven, or condemnation to Hell, as the case may be. A little reflection will make us confident that, without sacrilege or giving unnecessary offence to orthodox believers, we can apply the principle of 'tentativity' here.

3. THE MEANING OF MAN THE INDIVIDUAL IN RELATION TO METAPHYSICAL REALITY.

Are we not beginning to feel, not only the interdependence of all knowledge, but the interdependence of all men in such a way that the stress is not laid upon personal achievement and personal salvation, but upon the working out of some principle which is common to all men, and, if you like, to all things? Our personal objective may not be to achieve personal perfection in a "next world", and any reward which may have been thought to have been attached to such achievement. It is rather, having regard to the possibility which is in us of achievement on earth, to achieve that possibility and no more. One should not, when considering these matters, fall into the contrary error of assuming that one should adopt a materialistic automatism, which is now a rather worn out philosophy. There is another course to which the realizations of our time are fast leading us. The fact presents itself to us that we should cease to conceive each man as a being in a water-tight compartment, and, if we accept it, much of the old conception of man must crumble away. More and more do men realize that they become dependent upon their fellows in spiritual, social and economic matters; the forces are even working to break down the individuality of nations and of peoples. More and more, too, do we realize that the knowledge of any man has been instilled in the very mould of his frame centuries before he was born. Character is not made by each person as from birth; the mass of it comes from the race, only to return to the race before the personal life is ended.

It has been very hard for man as a perceiver to get away from the subjective view of the world so far as it concerns himself. In a few words, it is obvious that to the average man the world revolves round him as a centre of gravity, just as the stars once seemed to him to revolve round the earth. The fact is that neither does the world revolve round man nor the stars round the earth. The time has come when vast changes must be made in the conception of man's position, when he must be regarded as an object simply, and as a medium for the expression of the process of which I have spoken before. Scientific research has shown us that we cannot define any one life by placing periods at the birth and at the death of it. The broad racial influences and the intimate parental influences, which convey them, determine in a large measure the life of the child and the man to follow. What is not so determined is brought into his character not so much by his own development out of himself as by environment. There are two factors in short: heredity and environment. A third, I would suggest to you, does not exist. It seems possible, then, to assert that man is merely an element carrying on the tradition, if you like, of the human race, and is determined by that tradition.

Some French philosophers, in particular Bergson, emphasize the time element in personality in so far as a man must be considered not as a series of different characters at different times, but as a continuum. There is no reason why this conception should not be applied to the human race, in which all beings should be linked.

Let it be clear in your mind, however, that when we dethrone man, the individual, we do not intend to make our religion, our ethical system, our social system, nor any institution that is ours any more materialistic than it is at present. Rather do we intend to show to man a philosophy which will require of him a vaster altruism and personal self-sacrifice which must deprecate the pettier side of egoism. We seek to reconcile the requirements of the trinity of truth, beauty and goodness which orthodox religions would more and more keep in an unholy divorce. We would, in doing that, enliven religion with the discoveries of science, so that religion can accept even them. And, finally, we would set before man a higher altruism which can be a guide to him in all temporal and religious matters and a unifying interest which will explain his experiences, his impulses, and his hopes.

If such a philosophy should be suggested for our general acceptance, the accusation of basing it upon materialistic automatism and predestination will be raised by some. But is self-determination impossible in the circumstances we postulate? I think not! The matter requires a little consideration as to what is man. He is, perhaps, the embodiment of an experience which can perceive its environment, and in some measure itself. Linked with the ability to perceive is "conscience", which, having regard to its experience as represented in the man, knows exactly what course of action out of many presented to it at any given moment it is proper for the soul to accept. I would suggest to you that that is a generalization which may be applied to any man, and is none the less valid in that men do, as a fact, adopt wrong courses of action. The point is that the soul, if it acts "conscientiously", acts rightly, having regard to its own experience or stage of development. I would add, too, that no soul is so bad that it has not the potentiality to make good—there is a right of "redemption" for every man. "Conscience", however, we can no longer regard as a driving force. It is in no sense "will to do", and we must dissociate from "will" any sense of impulse or force. The importance of this statement lies in the fact that all action is initiated not from a free acting soul within man, but from impulses coming from environment which, linking themselves with the experience which is man, present courses of action, and in fact impel them.

Let us consider the activity of the mind following sensation. We may regard it better as an impulse which comes before the mind as perception. As impulse, it is essentially force. It travels thus through the mind, liberating forces as it goes, and eventually extinguishing itself in one of two ways, firstly, in the physical act, and, secondly, in storing up in the body the knowledge which has come to it through the impulse, a potentiality of which the mind will make good use later on. I do not pretend that strictly it must always extinguish itself in one or other of these ways, but these two ways are the elements in its extinguishment.

Now, you will see that the mind is receiving many impulses at any given moment of time like a citadel besieged. Every impulse suggests to the soul that it shall remain before the forces of consciousness as the basis of some action. I sit in my study with my books all around me. I have nothing to occupy my mind at the moment, and being naturally inclined to read books, my mind "seeks" a book to read. I may take any one out of hundreds. I may stretch out my hand for any one of them for they all call to me, and I may be undecided through some momentary weakness of will. I do not seek them: they attract me, and eventually something in my mind's mood requires a comedy, and with that all the other attractions are suppressed, and my hand shoots out for the book which contains it. There is no gainsaying the attraction which the several books have for me, whether individually they may be precisely suitable to my mood or not. The attraction, furthermore, arises in the perception of the book together, in part, with the recreation of its contents. *The will acts as a censorship*; the force which stimulates the mind to action is the force which is inherent in the act of knowing. The mind inhibits those impulses that are not properly suitable to it at the moment, and the uncensored impulse does the rest.

The conception of freewill and will generally must undergo a metamorphosis, and, although it does, I cannot but feel that self-determination still exists under the system which I propose as much as it existed under any other. There is, however, a slightly different emphasis and interpretation placed upon the ideas, "soul" and "conscience".

It is impossible within the limits of this article to consider the application of such a theory to the conditions under which we live, and in particular to the conceptions which we hold. The personal objective of man is definitely prescribed by the personality which is his. He must live up to the possibility of development which is in that personality at any given moment. No more can, nor need, be expected of him. No man should expect rogues to turn at once into saints any more than they should expect to make silken purses out of sows' ears. Man's personal heaven or hell he must seek or shun in this world and in no other. We must look a little to our church furniture, and cease to talk words of theology which are meaningless to the men who are really carrying on the torch of life. Ethics lays a new emphasis on altruism, and sets a loftier if not a more difficult ideal for us to seek. Above all, the doctrine of many-sidedness now assumes more real proportions, for what is required in our personal character is a wide sympathy, and an understanding which is the little model of the Omniscience towards which we may hope to tend. We will come to discount the judgment of the specialist in knowledge more and more, whether he be a hard-headed business man or a clerk in "Holy Orders". We will seek to leaven our experience with the experience of others. We will realize, too, the limitations of language and of systems of thought and religious practice, for many traditions and orthodox beliefs must crumble away to dust. This, however, will be no sacrilege for such have been born of the mind and word of man and not of God. Language has broken down as a medium for thought, and has become inapt to convey our meaning, or, from another point of view, there has been a metamorphosis of meaning.

IS THE THEORY OF RELATIVITY SOUND?[1]

By C. C. Allen,
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Probably the reason why Relativity is discussed so seldom is that most people know little and care less about the subject and regard any attempt to examine its claims as sheer waste of time. Relativity has never been accepted by scientists, although a few profess to believe in it. The general attitude is one of tolerance. When the question is asked, "What do you think about Relativity?" the answer almost invariably is, "I have never been able to make out what it means, but if the results claimed for it have really been obtained, there must be something in it". And if the further enquiry be made, "What are the results claimed for it?" the answer is usually, "Well, did it not enable Einstein to predict that light rays would be bent by the sun—or something".

The only attempts to justify Einstein's general theory of Relativity are based on the statement, "The theory works, therefore it must be true". Examination, however, shows that this statement must be changed to "Certain results are claimed to be true, therefore the theory which claims to explain or forecast such results must be true". If, however, we imagine the results claimed to be explained by two conflicting theories, the absurdity of the conclusion is apparent.

It is possible that in time to come Einstein's Theory of Relativity will be cited as a classical example of faulty reasoning.

Einstein himself claims to explain three things by his theory:

1. The rotation of the perihelion of Mercury.
2. The deflection of light by a gravitational field.
3. The deflection of spectral lines towards the red.

These are called by Eddington the three Einstein effects.

Charles Lane Poor, Professor of Celestial Mechanics at Columbia University, in an article in *Scribner's Magazine* for November, 1930, gives a comprehensive analysis of the so-called

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[1] A paper read before the Auckland Local Branch, July, 1931.

Einstein effects and a searching criticism of Einstein's mathematics. This latter is particularly interesting in view of the claim for Einstein's preeminence in mathematics.

Speaking of the rotation of the perihelion of Mercury, Professor Poor says: "The so-called relativity rotation of planetary orbits is a mathematical illusion—an illusion due to an incomplete mathematical transformation and to an illogical interpretation of the resulting formula. There is no relativity rotation of Mercury's orbit, and there is no Einstein law of gravitation."

Next, in connection with the deflection of light by a gravitational field, Professor Poor says: "There is no evidence of any kind to show that light rays are bent in any degree whatsoever as they pass the edge of the sun. The actual results of the many eclipse expeditions do not furnish the slightest evidence in favour of Einstein's prediction of retarded light."

Finally, with respect to the deflection of spectral lines towards the red, Professor Poor says: "There is neither rhyme nor reason in Einstein's specific formula nor of his prediction of a specific shift of the spectral lines. Further, there is no valid observational evidence to support his claims and predictions."

In face of the assertions of the followers of Einstein, it seems almost ridiculous to enquire whether there is in existence any such thing as a Theory of Relativity, and yet this is one of the first questions we have to face.

Einstein himself has stated publicly that his theory is not yet finished. In addition to this we must also realise that up to the present Einstein has failed utterly to give any intelligible explanation of his theory as far as it has gone.

Any serious attempt to determine the meaning of Relativity as described by Einstein cannot fail to show that it is merely a conglomeration of unwarranted assertions.

If we examine Einstein's own book on Relativity, published by Methuen and Co., we find that the whole of Einstein's argument is pseudo-scientific. At first sight his statements appear to be made in scientific form, but examination shows that generally there is no real foundation—the statement is merely a figment of Einstein's imagination. Einstein throughout makes the assumption that his readers are conversant with his meaning, but in most cases his statements have no real meaning.

On page 80, Einstein imagines an observer sitting on a revolving disc. This observer is sensible of centrifugal force acting upon himself and proceeds, quite wrongly, to attribute this centrifugal force to the effect of a gravitational field. Einstein says: "But since the observer believes in the general theory of relativity this does not disturb him; he is quite right when he believes that a general law of gravitation can be formulated—a law which not only explains the motion of the stars correctly but also the field of force experienced by himself."

Now, incredible though it may seem, in this faulty reasoning of an imaginary observer we have the whole of Einstein's reasoning about gravitation. No possible argument can make centrifugal force equivalent to any gravitational field. Centrifugal force always acts outwards from the centre of rotation, while a gravitational field always exerts an attraction inwards towards the centre of mass.

Einstein, however, is so pleased with his argument that he goes on to say that the special theory of relativity is applicable to those cases where a gravitational field is absent. Now no known natural phenomena have ever occurred in the absence of a gravitational field.

Absurdities such as these almost compel an examination of the question, "Is there in existence such a thing as a theory of Relativity?" and in an attempt to answer the question we will make use of Einstein's own description of what a theory is. Einstein says (page 123): "Theories are evolved and are expressed in small compass as statements of a large number of individual observations in the form of empirical laws from which the general laws can be ascertained by comparison. The theory finds the justification for its existence in the fact that it correlates a large number of single observations, and it is just here that the 'truth' of the theory lies."

Now if this be applied to Einstein's so-called theory it will be found that there is not the slightest justification for its existence. In his book on Relativity, Einstein does not make reference to even one single observation. The whole of his reasoning is based on purely imaginary happenings.

Commencing with an imaginary raven flying overhead, and viewed by two imaginary observers, one standing on an embankment over which a train is passing and the other moving with the train, he asserts that both observers will see that the motion of the raven is uniform and in a straight line.

This is not necessarily true, because if the raven was flying parallel to and at the same speed as the train it would not appear to the observer in the train to have any motion at all.

Einstein quite ignores the fact that both the magnitude and the direction of the motion will be different to the two observers. Reasoning from which half the facts are omitted can scarcely be expected to result in any conclusion of value. Yet this faulty reasoning is all that Einstein offers in support of what he terms the special principle of relativity.

In view of the absence of even one single observation, there need be no hesitation in asserting that there is no theory of Relativity in existence and in repeating the assertion that what is referrred to as Relativity is a mere conglomeration of unwarranted assertions.

One fundamental requirement in scientific work is precision and clearness of statement. In all ordinary work this requirement is met fully and completely. Any ordinary scientific principle or scientific theory is set out in clear and precise language. But when we attempt to investigate the meaning of Relativity we find that clear and precise statements are conspicuous by their absence.

It has already been asserted that Relativity has no real meaning, that what we refer to as Relativity is a mere conglomeration of unwarranted assertions. Time to-night will not permit of further examination of these assertions, but only of consideration of the basis which is supposed to underlie them. I say supposed to underlie them because no one, at any time, has ever succeeded in explaining what Relativity really means. Neither Einstein nor any of his followers has ever supplied an answer in clear and precise language to the question, "What is the real meaning of Relativity?" Now unless a theory can be definitely formulated it seems futile to attempt to discuss its soundness.

Einstein, in his preface to his book on Relativity, says: "The present book is intended, as far as possible, to give an exact insight into the Theory of Relativity." After reading this, one is surely justified in the hope that a perusal of the book will result in the discovery of what Einstein means by the Theory of Relativity. Unfortunately this hope is not realised. Einstein does not give any explanation of Relativity, does not say how it has been developed, and does not suggest how it is to be employed.

All we can do, therefore, is to consider those statements of Einstein which profess to define his theory. These are four in number and occur in chapters 5, 18 and 28 of his book.

Einstein says (Chapter 5, page 13): "If, relative to (K), (K_1) is a uniformly moving coordinate system devoid of rotation, then natural phenomena will run their course with respect to (K_1) according to exactly the same general laws as with respect to (K). This statement is called the *principle of relativity* (in the restricted sense).

This is merely a restatement of Mill's principle of the Uniformity of Nature, the truth of which is assumed to be axiomatic not only in all scientific work but also in all the affairs of everyday life.

It should be pointed out that natural phenomena run their course irrespective of any coordinate system whatever. When we say that natural phenomena run their course, we say all that it is possible to say unless we observe and describe the phenomena in detail. Einstein has no justification whatever for calling this the principle of relativity. The statement does not add to our knowledge in the slightest degree.

On page 61 (Chapter 18) Einstein gives a totally different formulation of the principle of relativity. He says: "But, in addition to (K) all bodies of reference (K_1) should be exactly equivalent to (K) for the formulation of natural laws, provided that they are in a state of uniform rectilinear and non-rotary motion with respect to (K). In this sense we speak of the special principle of relativity or special theory of relativity." This is a mere assertion, the falsity of which can be shown by taking an extreme case.

Suppose a reference body to be moving away from the earth with a velocity equal to the speed of light. To an observer on this reference body nothing would appear to happen on the earth, a moving body would not appear to move and a falling body would not appear to fall. Consequently such an observer could not possibly make the observations necessary for the formulation of natural laws. Even if the observer knows the velocity with which he is receding from the earth, no correction he can possibly make will enable him to obtain information as to the movements of bodies on the earth.

We have, therefore, at least one reference body (K_1) moving with uniform rectilinear and non-rotary motion which is not equivalent to the fixed reference body (K) for the formulation of natural laws.

A universal proposition is regarded as untrue if it can be shown to fail in one single case. We can therefore assert that Einstein's special theory of relativity is untrue.

It should be noted that every known law of nature has been formulated as the direct result of a series of observations. The truth of any particular law of nature may be verified by a further series of observations.

In no case does Einstein claim that the laws of nature can be formulated otherwise than as the result of observation. When, therefore, he asserts that a reference body (K_1) moving with uniform rectilinear and non-rotary motion is exactly equivalent to the usual reference body (K), the earth, for the formulation of natural laws, he asserts an absurdity.

Einstein says, page 61 (Chapter 18): "In contrast to this (special theory of relativity) we wish to understand by the general principle of relativity the following statement: All bodies of reference K, K_1, *etc.*, whatever may be their state of motion, are equivalent for the description of natural laws (formulation of the laws of nature). This formulation must be replaced later by a more abstract one."

This is a mere statement without any evidence whatever in support of its truth. The special principle of relativity has been shown to be untrue. Consequently the general principle of relativity must also be untrue.

Supposing an observer to be seated in an aeroplane which is rushing towards the earth in a spinning nose dive and which is at the same time subjected to a gale of varying intensity, it can hardly be claimed that the records of the observer will be equivalent to those of an observer on the earth's surface.

Einstein says, page 97 (Chapter 28): "We are now in a position to replace the provisional formulation of the general principle of relativity by an exact formulation. The form used in the provisional formulation cannot be maintained because the use of rigid reference bodies in the sense of the method followed in the special theory of relativity is, in general, not possible in space-time description. The Gauss coordinate system has to take the place of the body of reference. The following statement corresponds to the fundamental idea of the general principle of relativity: All Gaussian coordinate systems are equivalent for the formulation of the general laws of nature."

This final statement of the general principle of relativity is quite meaningless. When Einstein eliminates rigid reference bodies, he at the same time eliminates the possibility of observers making the observations necessary for the determination of natural laws. We find, therefore, that instead of giving an exact insight into the Theory of Relativity, Einstein merely gives us four statements which consist of two totally different definitions of the special principle and two totally different definitions of the general principle. The first definition of the special principle has nothing to do with Relativity. It is merely a statement that natural phenomena occur. The second definition of the special principle is an unwarranted assertion which is quite incorrect. The first definition of the general principle is another unwarranted assertion which must of necessity be untrue if the special principle is untrue. Finally, the second definition of the general principle does not convey any meaning whatever. It is something which Einstein claims to obtain by the use of a peculiar hybrid, "space-time", which in all probability does not exist.

To summarise:

The first definition of the special principle is unnecessary.
The second definition of the special principle is untrue.
The first definition of the general principle is untrue.
The second definition of the general principle is meaningless.

We are compelled, therefore, to conclude that the theory of relativity is unsound, or, rather, that the theory of relativity is non-existent; in short, that relativity is a delusion.

THE EXPERIMENTAL INVESTIGATION OF VOLITION.[1]

By W. M. O'Neil, B.A.

In the recent "Foundations of Experimental Psychology", edited by Carl Murchison, two important sections are omitted —thought and volition. While contemporary experimental psychologists have investigated thought-processes (for even the behaviourist has done so), they have, with a few exceptions, neglected volition. So much so that there is no comprehensive account in English of the experimentation in this field of psychology. While admitting the difficulties of investigation, one must deplore the general failure to recognize what has been done. The purpose of this paper is to bring this work under notice and to indicate the more important conclusions to be drawn from it.

I.—Experimental Findings.

Experimentation on volition began with Ach.(1) In his work on the Reaction-Experiment, he found that the will-act occurred before the stimulus ("I will do X when Y appears"), and not, as Wundt held, after the "apperception" of the stimulus. Ach concluded that the will-act, *i.e.,* the acceptance of the *Aufgabe,* set up a "determining tendency" which, when the appropriate conditions were fulfilled, gave rise to the reaction. Later Ach(2) attempted to measure the strength of these will-acts by their effectiveness in overcoming an "associative tendency". Each of his subjects "overleant", to a similar degree, a series of non-rhyming nonsense syllables. At a subsequent stage in the experiment, they were required to inhibit the tendency to respond with the associate as each of the syllables was presented in turn and to respond instead with a rhyming one ("Method of Interference"). The speed and correctness of the response were taken as a measure of the strength of the will-act involved. From his subjects' introspections he analysed the experience of the will-act into four constituents: (*a*) a sensory element—muscular tension, (*b*) awareness of effort, which was intimately connected with

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[1] Based on a paper read to the Sydney University Psychological Society, July 13, 1933. Dr. A. H. Martin kindly read and commented on the MS.

(*c*) thoughts of the task to be carried out, and (*d*) an experience expressible as "I truly will", which he termed the "actual factor" or essential characteristic of a will-act.

Michotte and Prüm's *"Le choix voluntaire"*⁽³⁾ was at the press when Ach's second publication appeared. They had investigated a volitional activity in which the *Aufgabe* was "I will do X or Y when Z appears". The subjects were given two numbers which could be either added or subtracted in some instances, and either divided or multiplied in others, according to prior instructions. The subjects were required to choose, "for a serious reason", one of the alternatives. They established the following phases in the act of choice: (1) fore period: (*a*) acceptance of the *Aufgabe,* (*b*) subsequent expectancy; (2) main period: (*a*) awareness of the alternatives, (*b*) consideration of the alternatives, involving motivation, (*c*) the actual choice, beginning with the disappearance of objective considerations entering into the motivation, and then a turning towards or designating of the chosen alternative, experienced as a "consciousness of action". At the same time, the feelings of expectancy, doubt and tension give way to certitude and relaxation. They emphasized the difference between the feeling of tension or effort and "consciousness of action", which Michotte in an appendix identified with Ach's "actual factor" ("I truly will"). They distinguished two types of choice: *Decision,* when the "consciousness of action" was prominent, and *Consent,* when the process is one of *laissez-faire* rather than a fully volitional act.

Boyd Barrett's work,⁽⁴⁾ which was carried out under the direction of Michotte, was a sequel to *"Le choix voluntaire"*. Eight liquid tastes, some pleasant, some unpleasant and others neutral, were prepared; each was given a nonsense name. The subjects learnt the tastes' names, so that when given a taste they could name it. The labelled tastes were then placed in pairs before the subject, with the instruction "choose and drink". The subject's attention was directed to the phase of motivation. Motives were described and classified; their evolution during the experiment studied, and the ways in which they could be strengthened were described. It was found that if a motive reached a certain relative strength choice resulted in favour of the alternative giving rise to that motive; if, however, either motive did not reach this "critical point", strengthening of one was necessary for a choice to be made. Only incidentally, however, did the more volitional activity receive mention; nevertheless, the work confirmed previous findings.

In Wheeler's investigation⁽⁵⁾ the emphasis was placed on the volitional aspect of the act of choice. His subjects were required to choose between two pictures or between two musical items; the chosen picture was given to the subject and the item reproduced. His observations confirmed previous work, but he asserted that the experience of self-activity or "consciousness of action" was not unanalysable as Ach and Michotte and Prüm had claimed. He asserted that his subjects, being more highly trained, were able to analyse the experience into kinæsthetic and organic sensations, while "consciousness of self" was a state of consciousness in which recognition of sensations and images produces a sense of familiarity in the experience; the self was thus mere consciousness of continuity.

Martin,⁽⁶⁾ however, found this experience distinct from kinæsthesia, which was usually experienced during the act of choice. Martin used two kinds of materials—smells and imagined predicaments. The smells were, unlike Boyd Barrett's tastes, unlearned in order to approximate more closely the uncertainty of everyday alternatives. They were presented in pairs and the subject was required to choose one. Each of the predicaments involved two alternatives of action, one of which was to be chosen. The volitional act involved in the acceptance of the *Aufgabe* was found to differ from that involved in choice, in that the former was submissive while the latter was assertive. Choices were of three kinds—"preference", "conflict" and "indifference"—each being characterized by differences in the period of decision. By asking the subject to reverse his decision (a task generally found impossible), the strength of the volitional act could be ascertained. In general, "preference" choices were found to be strongest, "indifference" weakest, while "conflict" occupied an intermediate position.

Wells⁽⁷⁾ employed Boyd Barrett's material and method, but placed the emphasis on volition. In addition, psychogalvanic records were taken. Her main findings were: (*a*) That "awareness of self", which she found in all volitional choices, was sometimes focal, sometimes scarcely introspectible, but always unanalysable. Sometimes it occurred as a mere "reference to myself", sometimes as the subject of experience, binding the various parts into "my experience", sometimes as a feeling of "self-activity" and sometimes clearly as "the self-in-the-act-of-choosing". (*b*) That the experience makes a sudden appearance at the moment of choice; there is a sudden change from the contemplation of objective things to an absorption of the chosen alternative into the self. (*c*) That the "experience of the self" appears in other activities, *e.g.*, at the warning signal, at the appearance of the stimuli. (*d*) That the reported degree of intensity of the experience of self-activity was found to correlate with the degree of deflection in the psycho-galvanic record.

McCarthy(8) modified Ach's method of interference so that the specific will act and the conditions for its execution should both occur in the main period. The instructions were not "find a rhyme for", or "transpose the consonants of the syllable when it appears", but "find a rhyme if the syllable is printed in red, transpose if in green", etc. Under these conditions, attention being directed primarily to the task, the reproductive tendency did not influence the execution of the intention to rhyme, transpose, etc. But when unfamiliar syllables were introduced, thus directing attention to the syllable rather than to the task, the inhibitory effect observed by Ach appeared. McCarthy concluded that the effectiveness of the resolution depends upon the direction of attention. If attention is distracted from the task, habits may interfere, giving either a wrong or a slower response; but if attention is directed to the task the habit becomes ineffective. Apparently any factor affecting attention will affect the outcome of volition. He holds that until these factors can be controlled, the measurement of the strength of volitional acts is impossible.

Lüderitz(9) used Michotte and Prüms' methods in order to discover the conditions under which "decision" or fully volitional choices occur. He found that when there is any serious opposition to or inhibition of the fulfilment of the purpose, a true choice occurred; the volitional act is really a resolution for more intense concentration, a strengthening of a motive already in existence rather than an independent motive itself. When, however, there is not this inhibition by other motives, "consent" choices, which are really processes of selection, occur.

Gies(10) gave his subjects choices between certain movements with an ergograph and a kinematometer. From the introspections it appeared that the "will to choose" may arise entirely within the experimental situation, or it may depend upon the experimenter's instructions, or upon the attitude of the subject or upon previous volitional acts. The experience of freedom appeared to arise from the reference to the "active ego" as the decisive factor, the other determining factors not always being recognized by the subject. The awareness of the ego did not occur in all choices; but did when the choice was very "active", or if there was inhibition as a result of other motives, or where the situation was very "significant" for the subject.

Two other recent investigations give us further insight into the "awareness of self" which has figured so prominently in the previously described investigations. Amen⁽¹¹⁾ performed six groups of experiments, of which the three last are the most important. The subjects were asked to note and describe any experience of the self that occurred. In group IV they were required to make choices between coloured designs, and to solve problems selected from intelligence tests; in group V only the problems were given; and in group VI the same procedure was adopted, but with the subjects working in a group. She concluded: (*a*) That the self-awareness is not a simple, unanalysable experience, but a "complex integration of the perceptual type, an integration of sensation with meaning, of image with meaning, or of both with meaning". When sensations, or images, or both, are logically organized with reference to the past or total activity of an organism, we have "self-experience". (*b*) That a person is not always self-conscious, and that different persons differ as to the frequency of the experience. (*c*) That problem-solving yielded the highest frequency, then choices and then recognition. (*d*) That group work tended to increase the frequency.

Cattell,⁽¹²⁾ in investigating pre-sensation, produced sensory stimulation under the following conditions: (i) distraction from the stimulus, (ii) great intensity of stimulation, (iii) a relaxed attitude on the part of the subject, (iv) weak stimulation of an unfamiliar kind, and (v) the normal attentive attitude. A large number of introspections were obtained and from them these observations, amongst others, were made. In distracted or passive conditions the sensations aroused by the stimulation, develop more slowly than usual and instead of being immediately objective, pass through a subjective stage when they are blurred, unlocalized and part of the self, as it were. In the course of the experiment all subjects came to appreciate a duality in ordinary experience—a distinction between self and not-self; this duality disappeared in the prolonged pre-sensation stage. Thus from a state of duality, experience passed through a state of flux and emerged again into a new state of duality. In an appended note Cattell argues that this may be causally connected with the frequently observed changes in the "functional self" as the person moves from one environment to another.

II.—CONCLUSIONS.

In recent years there has been little theoretical discussion of volition in scientific terms; Aveling in England⁽¹³⁾ and

Lewin in Germany(14) appear to be the only ones who have treated the subject in an extensive way. Yet a consideration of the experimental findings will reveal a number of well-founded conclusions, as well as unanswered questions.

1. *Conation and Volition.* Conation is a striving towards or away from some object, an activity which Lewin attributes to the releasing or relieving of a tension or upset in the equilibrium of the organism which has been produced by some change in the "organism-environment" complex. Whereas volition is a process by which either a tension, and hence a conation when the appropriate conditions are fulfilled, is created, *e.g.,* in the resolution to carry out some task, or a conation derived from a tension produced in some other way, is strengthened, *e.g.,* in the determination to carry on an activity already begun and in the act of choice. Thus volitional acts occur (i) when a conation cannot become effective, either because of its inherent weakness or because of the strength of opposing conations, (ii) when the situation is particularly significant for the person, and (iii) when there is a previous volitional act which is relevant to the present situation, *e.g.,* when an indifference choice is made simply because one has resolved to make some choice.

However, the relation between a volitional act and the conation involved is not fully elucidated. It would appear that a conation may vary quantitatively in three ways—the maximum strength which it attains, the speed with which it attains this strength, and the persistence or duration of the conation both at its maximum and at lesser strengths. What relation these differences may have to differences either in the volitional act itself or in the mental context of that act, has not been shown.

2. *Choice.* When a number of alternatives confront the subject, he may either (i) merely select one if the motive arising from this alternative is sufficiently strong, or (ii) choose between them, when there is an approximate ("preference" choice) or exact equivalence of motives ("conflict"), or when there is no motive sufficiently strong to produce action ("indifference"). Only the true choice (ii) can be called volitional; the process in this case consists of strengthening one of the motives to a sufficient relative or absolute degree to remove the impasse and produce action.

3. *Volition and Attention.* Unlike a habit, a conation derived from a volitional act needs the accompaniment of attention to become effective. The activity will lapse unless the task to be done is kept clearly in mind or is clearly recalled at the appropriate moment. From my own work I have found

instances where attention to the task is insufficient; in endeavouring to maintain a maximum grip on a Smedley hand dynamometer and to trace dotted "e's" with a pencil as slowly as possible (test adapted from Downey), a series of resolutions made as the activity is in progress is required.

4. *Volition as Self-determination.* Volition is experienced as an activity in which the "self" participates. However, while Wheeler asserts that this experience is only illusory, being an interpretation based upon kinæsthesia and the awareness of the continuity of experience, most of the other investigators assert that the experience is unanalysable and basic; and while most hold that the experience is characteristic of volition, Amen found it more frequent in problem-solving than in choosing, and Cattell that all objective contemplation is accompanied by an awareness of oneself. Aveling makes a distinction which is useful in removing this apparent disagreement, when he distinguishes the intuition of oneself from the concept of oneself. The former is the bare knowledge of one's existence—the mere distinction between self and not-self; the latter is what one is pleased to think of oneself—a complex of ideas built up around the notion of oneself. The experience investigated by Amen was obviously the latter, a complex integration organized with reference to the total activity of the organism; hence its infrequency in ordinary circumstances and its increased frequency in group work. The intuition of the self, on the other hand, was what Cattell found.

In volition it is the concept of the self that is experienced as giving support to the motive that is created or strengthened. Martin speaks of the chosen alternative appearing to be drawn into the self, and Wells of the absorption of the chosen motive into the self; Gies observes that other motives for action are obscured by that arising from the "active ego". Hence it would appear that the motive is identified as part of oneself; this brings the whole weight of the self-regarding sentiments into the support of that motive, thereby giving it the necessary degree of strength.

Thus volition is an enlarging of the field of action; not only is reference made to the problem of relieving the existing tension, but consideration is given to the compatibility of the contemplated act with past and projected activities and the complex of ideas involved in the concept of oneself. Just what ideas arise will depend upon the surroundings in which the person finds himself and upon his intellectual level and general habits of thought operating upon the whole of his past experience and action. When the volitional act is completed, some modification, if only an extension, of the concept of the self occurs and a precedent for future action is established. The extensiveness of the field of mental activity in volition justifies one speaking of "self-determination", but Aveling's treatment(15) of the self as an entity possessing freedom of action is not warranted by the experimental findings.

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REVIEW ARTICLE.

THE SCIENCE OF LOGIC.

Is philosophy a science or set of sciences, or is it a field in which "all may have their fancy"? And is it from the former or from the latter point of view, as guides to unmethodical philosophers or in order to have a holiday from the rigour of their own studies, that so many scientists have of late made incursions into the philosophical field? The mathematicians have on the whole aspired to teach philosophy to be mathematically exact, while the biologists have rather sought to find excuses for their own haziness. To bring philosophy to the condition of mathematics has indeed been one of the main aims of modern philosophers, and this has largely prevented the recognition of what philosophy as an independent study has to teach the mathematician and other scientists. The necessary exactness, the appearance of philosophy as a body of logical doctrine, will not, however, be attained until the conception of it as a historical tradition, a catalogue of the work of successive exponents of the philosophic art, is departed from, and until it is recognised that "rational" science is a delusion and that mathematicians in avoiding empiricism are sacrificing real exactness. The independent development of the science of philosophy (or logic) should not, of course, prevent account being taken of what past philosophers have done; and an understanding of the work of Plato, in particular, would put much of the recent "scientific" philosophising out of court.

In the works under review[1] these points find illustration. The late F. P. Ramsey was in the first instance a mathematician, though one whose work was closely connected with that of the mathematical philosophers of Cambridge, and this collection of his writings (including, among the more recent, previously unpublished papers, what are in effect notes on his earlier work) shows, I should say, a growing recognition of the breadth of the philosophic field and of the inadequacy of the merely "neat" solution. Since Ramsey was not quite 27 when he died (in January, 1930), one would naturally speak of his promise, rather than of his performance, in philosophy. But the mainly chronological arrangement of the papers permits one to observe a departure from the earlier habit of assuming, in the course of an argument, some contention of a thinker of the Cambridge school (*e.g.*, p. 140: "The difficulty will disappear when my assertion is analysed according to Mr. Russell's theory of descriptions", no explanation or defence of Russell's theory being given), and the emergence of a wider outlook, even if it only took Ramsey as far back as Hume, with Mill and Peirce coming in on the way. Further work along the same lines might well have led him to a philosophical position from which to reject the rationalistic mathematics in which he had been trained.

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[1] "The Foundations of Mathematics", by F. P. Ramsey. (Edited by R. B. Braithwaite, with a preface by G. E. Moore.) London: Kegan Paul; 1931. Pp. 292. Price: 15s. net.

"The Province of Logic: An Interpretation of Certain Parts of Cook Wilson's 'Statement and Inference'", by Richard Robinson. London: Routledge; 1931. Pp. 292. Price: 10s. 6d. net.

"L'Empirisme dans les Sciences Exactes", by W. Rivier (Archives de la Société Belge de Philosophie). Brussels: J. Perebooms; 1930. Pp. 13. Price: 2 fr.

As it is, Ramsey's work exemplifies the attempt of the mathematicians to develop a philosophy at a time when independent philosophy speaks with an uncertain voice. Rivier's short paper also deals with mathematico-philosophical controversy, particularly on the "Law of Excluded Middle", and indicates that, if mathematicians are in some confusion on the subject, they are no more so than many quite renowned philosophers. Rivier concludes by hoping that traditional logic may be able to defend its positions. Robinson also, though his main aim is "to discover and develop Cook Wilson's view of the province of logic", is concerned to defend a particular philosophical tradition. He certainly succeeds in drawing out from the mass of material in "Statement and Inference" certain critical issues, but his exposition leaves it clear that Cook Wilson was more of a traditionalist than a thinker and that he tried in vain to solve the problems raised by modern realism in conformity with philosophical tradition.

This tradition was not that of the "literary philosophy" which neglects mathematics. Indeed, A. S. L. Farquharson, editor of "Statement and Inference", remarks in his postscript that Cook Wilson's "whole effort was directed to maintaining the objectivity of mathematics and the mathematical sciences". Thus, in spite of his opposition to modern developments in mathematical theory, we find the two tendencies coming together in such matters as the recognition of *certainty*. Ramsey remarks (p. 258): "I have always said that a belief was knowledge, if it was (i) true, (ii) certain, (iii) obtained by a reliable process." And Robinson defends what he regards as the assumption we make in ordinary life (p. 249) "that there exists the faculty of knowledge, issuing in particular acts of knowledge or apprehension and characterised by certainty". It is denied, on Cook Wilson's view, that belief can ever be knowledge, but at least the two positions agree on the point that there is a type of cognition that cannot be mistaken—and hence arises the attempt to obtain philosophical "knowledge", to make philosophy as "rational" as mathematics.

It is this contention (the materials for the refutation of which appear in the *Theætetus*) that has to be overthrown if philosophy is to be worked out coherently and to prove of actual assistance to the scientist. And, of course, the notion of the object of certainty (the axiom, *e.g.*) will disappear along with that of the faculty of certainty. Failing this, we either have the Cook Wilson version of logic as the study of thinking, a position which has to buttress itself with certainties and indefinables and dogmatism generally, or a version like Ramsey's of logic as a set of tautologies (though Ramsey also recognises "the analysis of thought" as a separate study, incorrectly called logic). The affinity of these views with the positions of Descartes and Leibniz further indicates their common rationalism.

The very appeal to certainty is of a sort to disarm criticism. But, like Protagoras and Socrates, Cook Wilson is unable to show that there is such a thing as his type of cognition (knowledge) that cannot err or how it could be connected with the type (opinion) that can err, and Robinson's defence, while it clarifies the position considerably, by that very fact brings out its weakness. Cook Wilson regards knowledge as indefinable, though he admits that it belongs to the genus "activities of consciousness". Opinion, which also belongs to this genus, is also indefinable. But it involves knowledge; the opinion that A is B necessarily involves the knowledge of A and the knowledge of B, and also the knowledge that we do not *know* whether

A is B or not. Similarly, Robinson argues, Cook Wilson must be understood to hold that "the activity of knowledge involves the knowledge that it is knowledge". This seems to be borne out by Cook Wilson's contention, in support of the view that knowledge is indefinable, that "our experience of knowing being the presupposition of any inquiry we can undertake, we cannot make knowing itself a subject of inquiry in the sense of asking what knowing is".

It is assumed that, in asking what knowing is, we should be saying "*I do not know* what knowing is", and thus implying that we do know what knowing is. But actually the question "What is knowing?" implies no reference to the questioner himself, any more than inquiring implies "undertaking" inquiry in the sense of saying "I am going to inquire". In fact, knowing is not a *logical* presupposition of inquiry in the sense of being involved in what is inquired into, as contrasted with what is inquiring. And, while this confusion is at the root of the matter, it may be added that even if, whenever we knew, we were aware of that fact, this would be a very curious ground for holding that we could not make the fact a subject of inquiry.

The unrealistic view Cook Wilson takes of knowing conflicts with his realistic account of the known. He maintains that, just as the being of a collision involves not merely the being of the colliding bodies but their having a being distinct from their being in collision, "so also the apprehension of an object is only possible through a being of the object other than its being apprehended, and it is this being, no part itself of the apprehending thought, which is what is apprehended" (*Statement and Inference*, p. 74). But if, as the phrase "the apprehending thought" implies, the thought is what apprehends, it, in exactly the same way, must have a being distinct from its apprehending, and it is this being which apprehends. Hence this being can be a subject of inquiry in distinction from its relation of apprehending; and it is not true that, as Robinson says (p. 263) in explanation of Cook Wilson's position, "any particular act of apprehending a fact is also the particular act of apprehending that we are engaged in the particular act of apprehending that fact". The very expression, "act of apprehending", confuses the relation with the thing that is so related, just as does the use of "thought" for that which thinks.

On these lines we can object to Cook Wilson's distinction of logic from the sciences, on the ground that it "studies thinking as opposed to the object of thought, while science studies the things that are the objects of ordinary thought", and to his contention that it "is a new kind of thinking which we may call reflective . . . and comes into existence in the conscious attempt to attain knowledge". On the contrary, if logic *studies* thinking, then that thinking is an object of thought and is not opposed to objects of thought, and the study is not a peculiar kind of thinking but is concerned with certain particular questions, *i.e.*, is a certain science. The halfway realism of Cook Wilson is simply untenable.

But it is only this confused conception of reflective thinking that enables Cook Wilson to retain the view that logic is concerned with thinking. We may quite well begin our study of logic by considering it as enabling us to distinguish between correct and incorrect thinking, but we soon discover that the difference has to be expressed in terms of what is thought, that it is what is thought that is true or false, and that the theory of truth is a theory of existence. Cook Wilson, however, supposing himself to have found a type of thinking that is true in itself (*viz.*, the self-guaranteeing cognition of Descartes), and having to contrast it with a type that is not true in itself, cannot express the untruth of the latter except in terms of what is thought, and yet cannot establish any other forms for what is opined than those of what is known. The upshot is that opinion cannot be expressed at all, and that logic is reduced to thought's self-certainty. Robinson, noting Cook Wilson's admission that the study of statement conducts us, not to forms of thinking, but to forms of objects thought about (and the same, it may be added, is true of the study of inference), remarks that "it becomes difficult to see how this study, and in particular the study of quantity quality relation and modality, is relevant to logic". In fact, it becomes impossible to see how anything is relevant to logic. Logic can be re-established only by dropping the notion of a cognition that validates itself.

The wrestlings of Cook Wilson and Robinson with the question of opinion are instructive. According to Robinson (p. 84), "all statements ought to express knowledge. If we do not know whether A is B, we ought not to say 'A is B' but only 'I think A is B'. And this statement expresses knowledge. The fact which it means is the fact of our having a certain opinion, and this fact is something that we know. We know that we think that A is B, and the statement 'I think A is B' expresses this knowledge." But what is it that we do think? That A is B—exactly the same as we should know, if we knew that A is B. Clearly, then, statements can express opinion as much as "knowledge"; and it is not the case that when we have an opinion, we know that we do not know—on the contrary, if we think about ourselves in this connection at all, we think that we know. Thus no difference whatever has been shown between knowing and opining or believing. Knowing, in common usage, is believing what is true, this truth depending on the actuality of what is believed and not on any peculiarity of our attitude to it. And the same applies to our true beliefs about knowing. "We do not", says Robinson in conclusion, "assume that knowledge occurs because of the intolerable difficulties we should be in if it did not occur. We *know* that it occurs." Precisely; knowledge is one occurrence among others with which we are acquainted; it occurs and we believe that it occurs; and our belief being true is called knowledge (by those who share the belief).

Cook Wilson meets with similar difficulties. "The man who forms an opinion is not entitled to say that all A is B, much less is that an expression of his attitude of mind. It is not adequate to the thought it may be supposed to represent. A more adequate expression would be 'A is perhaps B' or 'A is probably B', assigning at the same time the reason; the reason being a statement of evidence. Now, if we assume that the word 'probably' simply represents an objective characteristic of the evidence . . . . we have failed to provide in our statement for opinion as opinion at all." The solution is that "the word 'probably' does imply the attitude of opinion . . . . it does add something to that estimate of the evidence which in the process of forming an opinion can be called judgment" (*Statement and Inference*, p. 96). However, it appears later that there is illusion in our saying A is *probably* B, "where the adverb which refers solely to our subjective inclination is made to qualify grammatically the verb of objective existence" (*ibid.*, p. 104). Thus, as has been said, there is *no* way of expressing an opinion; we can only express our knowledge, and what it is that we opine remains a complete mystery.

No solution of logical problems, then, is to be found on the side of thinking. We can believe what is true and we can believe what is not true, but logic is concerned with certain things which are true and on finding out which we are said to "know" logic. Robinson's discussion (Ch. X) of "metageometry" is valuable, not so much in its theory of imagination as in bringing out the fact that non-Euclideans and Euclideans (of whom Cook Wilson was one) are disputing about what is true, what are the geometrical facts. While Ramsey, on the other hand, rightly sets aside the question of thinking, his theory of "tautologies" obscures the point that logical and mathematical theories are either true or false, *i.e.*, that we are either right or wrong about the logical and mathematical facts. The view that there is something tautologous about these truths is based on the conception of the *objectively* certain, that which asserts or establishes itself—the object of "rational" science—an object which, as before, could have no relation to any other objects.

Thus in contemporary logical and mathematical theory we have absurd questions as to whether such and such propositions are axioms (or as to what axioms we shall use) in place of the real question whether they are *true*. We also have the false doctrine of elements, or elementary truths, and it is the bolstering up of this doctrine that leads to the defects of Ramsey's theory, just as the confusion about thinking leads to Cook Wilson's further errors. In the first paper, which gives the title to the volume, Ramsey says (p. 5): "We must begin with the notion of an *atomic proposition*; this is one which could not be analysed in terms of other propositions and could consist of names alone without logical constants." Again, in the paper on "Universals" (p. 123), we read, "'Socrates is wise' is not an atomic proposition, and the symbols 'Socrates' and 'wise' are not the names of objects but incomplete symbols. And according to Wittgenstein, with whom I agree, this will be the case with any other instance that may be suggested, since we are not acquainted with any genuine objects or atomic propositions, but merely infer them as presupposed by other propositions." Here, apart from the false assumption that names and not things are the constituents of propositions (*cf.* the contention in the paper on "Facts and Propositions" that we have belief and disbelief towards *words*), we have the rationalist view that complex things presuppose elements (ultimate parts) of which they are made up, a view which was thoroughly exploded by Zeno, and which is destroyed by the admission that we do not know any such elements and therefore do not know that such elements *could* compose non-elementary things, and therefore, again, cannot infer their existence.

In the first paper Ramsey maintains that mathematics consists of tautologies, though he admits that "tautologies and contradictions are not real propositions but degenerate cases". A tautology like *p or not-p* (the "law of excluded middle") "really asserts nothing whatever; it leaves you no wiser than it found you. You know nothing about the weather, if you know that it is either raining or not raining." Yet such pieces of ignorance are to compose mathematics, and it is a "blemish" on the primitive propositions of *Principia Mathematica* that the Axiom of Reducibility is "a genuine proposition, whose truth or falsity is a matter of brute fact, not of logic". To say, however, that logical truths are not matters of brute fact but tautologies means that there are no logical truths and no science of logic. So with mathematics; it is simply not the case that "'2 × 2 = 4' is not a genuine proposition . . . . but a tautology which can be seen to be tautologous by anyone who can fully grasp its meaning". On the contrary, it is a matter of brute fact, which everyone who knows it has had to learn. The distinguishing of mathematical and logical propositions from empirical propositions would, in fact, compel us to hold that mathematics and logic cannot be studied.

Ramsey not surprisingly follows up the logic of identity along the lines of Mill, remarking (p. 146) that "the conclusion of a formal inference must, I feel, be in some sense contained in the premisses and not something new", which is as much as to say that the conclusion must in some sense not be a conclusion at all but be a mere assertion. In the matter of general propositions, however, he distinguishes *conjunctions* such as "Everyone in Cambridge voted" from *variable hypotheticals* such as "All men are mortal". He admits that when we look at these two types "objectively, *i.e.*, at the conditions of their truth and falsity, they appear to be the same", though "when we look at them subjectively, they differ altogether". The difference seems to lie in our ways of finding them out; but, however we do this (whether by counting or in any other manner), the fact remains that what we come to in either case is a general proposition without qualification. On any other view it could not be stated as a single proposition; and, as a single proposition, it is just as "elementary" as any other.

In an interesting (previously unpublished) paper on "Truth and Probability", Ramsey, while recognising degrees of belief, rejects degrees of truth. But he strives vainly to defend the attaching of an arithmetical value to degrees of belief (he can do so only in the tautologous manner), and, while he touches on it, he does not press the important point that arguments involving probability are really arguments of the usual formal type, containing perfectly general statements about *proportions*. The question of strength of beliefs Ramsey rightly connects with habits of action, but he seems not to see that while these habits, as demands for objects, determine rates of exchange by their relative strength, no individual man's demands (or his special demands for information) form a closed market, so that there is no question of evaluating in relation to one another all his degrees of belief. What a man is prepared to risk on a certain belief varies with circumstances, and there is no common measure of all the factors in any one such situation, let alone of all such situations. Hence "my degree of belief in proposition p is $\frac{1}{3}$" can never mean anything.

Such problems are to be solved, then, not by looking for primitive propositions but by recognising the empirical character of logic, mathematics, economics or whatever happens to be in question. Discussions of "excluded middle" are similarly beside the point. Accepting Ramsey's contention that this "law" gives no information, we cannot regard it as a proposition of logic or of anything else. At the same time, we may say that a person who maintains that a thing can be neither A nor not A, or that a proposition which is not true may also not be false, does not understand his own terms. At some point he will introduce negation in the usual form; if, *e.g.*, we say his views are nonsense and he says they are not nonsense, he will think he is contradicting us. It will not matter if he uses the expressions true and false to mean what we mean by *demonstrably* true and *demonstrably* false, for that usage, while according to it a proposition may be neither true nor false, will imply the very usage that was to be superseded. But it will introduce an uncalled-for reference to our powers of demonstration, when the question is of the characters of the thing that may or may not be demonstrated. So, in regard to future events which, on the Aristotelian theory, "may or may not be" (Rivier; p. 4), the point is that even if we cannot deduce from present conditions the occurrence or the non-occurrence of a certain sort of thing at some future time, this does not affect the occurrence itself, and a pair of contradictory propositions, one true and one false, can be found in this case as much as in any other case.

If, as Rivier says (p. 11), the mathematical "empiricists" argue, against the view that a proposition cannot be other than true without being false, that that is precisely the point at issue, and that only after considering what means of settling the question the mind has, have we the right to decide whether the law of excluded middle applies *or not*, they are showing in the last two words the absurdity of their position since the "law" might neither apply nor not apply. There is nothing in the least empirical in confusing the conditions of our knowledge with the conditions of existence, and it is with the latter that logic is concerned (though it will incidentally apply to the conditions of our knowledge, and the proposition that we can find a number possessing the property A will be true or false, just like the proposition that there is such a number). The conception of undetermined future events is, incidentally, equivalent to the denial that there is such a thing as the future, and so is a confused one. And, further, to say that it is not *now* true or false that I shall write tomorrow is to confuse between the time of making the assertion and the time of what is asserted, the latter alone entering into what is said to be true or false.

Logic, then, as the study of the conditions of existence, is in no sense a study of our attitudes or capabilities; logical truths would remain unaffected if there were no persons in existence. At the same time, they are "brute facts" and not identities, as rationalistic thinkers suppose. The method of disposing of primitive identities (or pure being without admixture of not being), and the development of logic as a theory of categories, are to be seen clearly enough in the *Sophist*. But scientists are scarcely to blame for neglecting Plato, when philosophers themselves have almost completely passed over the empirical side of his doctrines and have in the main, until recently, treated him as a rationalist of the Socratic type. What is of the first importance, then, alike to the study of Plato and to the study of logic, is the showing up of rationalist fallacies, the rejection of conceptions of the primitive, the elementary and the certain, and the concentration on facts. It is on such a turning to empiricism that the progress of science, including logical science, depends.

JOHN ANDERSON.

REVIEWS.

REMEMBERING: A STUDY IN EXPERIMENTAL AND SOCIAL PSYCHOLOGY. By F. C. Bartlett. Cambridge University Press. 1932. Price: 16s. net.

One has long felt of the Ebbinghaus experiments on memory, highly as one must value such pioneering work, that they were highly artificial as to the conditions under which they were made. To begin with, the material used was so mechanical that one felt that from it one could get but an inadequate picture of the real functioning of memory. Secondly, the situation of the subject was equally artificial and just as unlikely to give a true reflex of memory processes. That does not mean that nothing was achieved: a good deal was achieved both in methods and results. Still, there remained the rather formidable and far more complicated task of investigating memory under something like real conditions, both individual and social. This is what Mr. Bartlett has attempted to do, and, after reading his book, one cannot but feel that he has succeeded notably in coping with the difficulties and complications necessarily involved in a departure from the use of nonsense material.

The author proceeded to the use of material which he hoped "would prove useful in itself". To begin with, he "was interested in the conditions of individual perceiving, imaging and remembering", an interest which shows how widely he had conceived his problem. Soon, however, he found that "social factors were playing a large part", a fact which led him to "experiments which would help to show what occurs when material is dealt with in succession by a number of persons all belonging to the same social grouping". These experiments led to the "study of specific social influences upon remembering, which forms the second part of this volume". As the mental processes of remembering are studied here "in a realistic manner, just as they actually occur in any normal individual, both within and without the group . . . . it is natural that many common opinions concerning these processes are confirmed by the experiments. . . . However, some widely held views have to be completely discarded, and none more completely than that which treats recall as the reexcitement in some way of fixed and changeless 'traces'."

The author points out that all the pioneers in experimental psychology were trained either in physics or physiology. They, naturally, over-emphasized the importance of stimulus-determination and the ideal of simplification by isolation of reaction, thereby raising profound psychological difficulties. Ebbinghaus thought that he could arrange material in such a way as to be of the same significance for everybody. But the use of nonsense syllables in the laboratory has shown that they set up associations even more odd than does sensible material. Here one is reminded of an attempt to get from a list of twelve nonsense syllables read once uniformly to a group of forty students a uniform curve. After the one reading the subjects were required to write down those which they could remember without difficulty. One hoped to secure a curve of performance from the group, high at the two ends and sagging uniformly towards the middle. This curve was to be used as a contrast to curves obtained respectively from a list of words, some of which were shouted, from another list of words some of which were whispered, from another list of words some of which had the objects shown, and so on. It was hoped in this way to give with the respective curves a visual representation of the contrast between material with a uniform appeal and the appeal of intensity, change, concreteness or realism, personal interest, and so on. Unfortunately, however, the result was only partially successful. The effect was spoiled, to a great extent, by the very fact that certain of the nonsense syllables, not near the ends of the series, had somehow awakened interest and started associations, so that they were remembered by many of the subjects, when by the rules they should not have been.

"So far, then, as the stimulus side of his method goes, Ebbinghaus's work is open to the following criticisms: (*a*) It is impossible to rid stimuli of meaning so long as they remain capable of arousing any human response; (*b*) the effort to do this creates an atmosphere of artificiality for all memory experiments, making them a study of the establishment and maintenance of repetition habits; (*c*) to make the explanation of the variety of recall responses depend mainly upon the variation of stimuli and their order, frequency and mode of presentation, is to ignore dangerously those equally important conditions of response which belong to the subjective attitude and to predetermined reaction tendencies." "New problems, most of them concerned with conditions of response that have to be considered as resident within the organism itself, have been forcing themselves to the front, and it is more than time that their implications were explicitly stated."

The author also points out that statistical methods are rough and ready, "scientific makeshifts". They are "devices for handling instances in which numerous conditions are simultaneously operating. They do not show how all these conditions are related, and by themselves they throw no light upon the nature of the conditions." In this connection, the author quotes Yule as saying: "The very fact that the experimenter is compelled to use statistical methods is a reflection upon his experimental work. It shows that he has failed to attain the very object of experiment and exclude disturbing causes." Here we have, says the author, "just the opposite error to that of the Ebbinghaus type of experiment. There we find a naïve belief in the complete efficiency of external circumstances to produce any sort of desired reaction. Here, at its worst, we find an equally naïve belief in the value of counting, averaging and correlating responses, even though the investigator ceases to worry about the variability of their determining conditions." Here, of course, the author is insisting on the well-known distinction between quantity and quality, between enumeration, summation, on the one hand, and the nature of what is enumerated on the other. It is interesting to remind oneself in this regard, that the Gestalt movement in psychology, holism and emergence in philosophy, and organicism in biology all have their point in insisting that natures are wholes, and that wholes are more than the sum of their parts.

It is impossible in the space available to give a detailed account of the long series of careful experiments of which Mr. Bartlett gives the records in his book. Suffice it to say that they cannot be neglected by the psychologist who is interested in the real function of memory. The book is strongly recommended to those interested in memory or in the investigation of the processes of memory. In conclusion, however, I should like to draw attention to the *Journal of Experimental Psychology*, 13, 1930, where Miss F. C. Davis, in an article on "The Relative Reliability of Words and Nonsense Syllables as Learning Material", decides against Ebbinghaus's contention that nonsense material is more uniform for learning; whereas Miss F. M. Sauer, in an article on "The Relative Variability of Nonsense Syllables and Words", finds that there is a greater variability when words are used.

H. TASMAN LOVELL.

THE SOCIAL AND POLITICAL IDEAS OF THE VICTORIAN AGE. Edited by Professor F. J. C. Hearnshaw. London: George G. Harrap & Co. 1933. Pp. 271. Price: 8s. 6d. net.

This is the eighth and final volume of the series of annual lectures given at King's College, London, on the work of the social and political idealists. As a whole, the series ranges from St. Augustine to Matthew Arnold, and perhaps no volume is more significant than this survey of the Victorian Age, for it summarizes those theories of which the events of our lifetime have been the external manifestations. In this sense, there is more continuity in Volume VIII than in the preceding ones, and this is shown in the massing of Victorian theories into clearly opposed camps. On the one hand were the idealists led by T. H. Green, the educationalists under Matthew Arnold, and the social psychologists who followed Walter Bagehot: on the other side stood Herbert Spencer's individualists, the Marxians, and the Nationalists who believed in Taine—strange bedfellows, it is true, but representing the various goals reached by those dissatisfied with existing conditions and confident of the power exercised by movements of the mind.

The most striking conclusion to be derived from this book (and it is well brought out both in Dr. Gooch's introductory survey and in Mr. C. H. Driver's final summary) is the terrific growth in the practical influence of political theories in the Victorian century. The late Professor Dicey first emphasized the significance of the psychological approach to modern politics and its resultant effects on public opinion, and each essay in the symposium under review stresses this point. The year 1859 is rightly taken as the turning-point in this regard, for it saw the publication of Darwin's "Origin of Species", Bain's "Emotions and the Will", and John Stuart Mill's "Liberty", to be followed in the next year by Spencer's published programme of his evolutionary psychology. Most of the old type of rationalism had now gone, and thinkers were beginning to reinterpret life in biological terms and to dabble in the implications of the theory of evolution. Professor Hearnshaw summarizes this in his chapter on Spencerian individualism, but adds little that is new, and his chapter leads naturally to Mr. J. L. Gray's careful analysis of Marxism. More striking is Professor de Montmorency's contention (in his chapter on Sir Henry Maine and the historical jurists) that there is a distinctly derivative connection between Darwin and Maine, and that not only because the "Origin of Species" preceded the "Ancient Law" by some two years.

Mr. Driver's essay on the social psychologists contains the most original research in the book and, combined with his appendix, gives an idea of the origin of the youngest of the social sciences and of its development in the last sixty years. He directly attributes the new science to the doctrine of "natural selection" and reproduces the feeling of feverish activity in the fifteen years preceding the publication of Bagehot's "Physics and Politics"—years in which the scientific method appeared to open up illimitable possibilities in the study of man. Bagehot himself claimed that his book was no more than the application of Darwin's analogy to social institutions ("it only amounts to searching out and following up an analogy"). But it was more than this and, despite its faults (which made Ernest Barker suggest a change of its title to "Psychics and Politics"!), marked a milestone in social history. Bagehot asked questions that scientists in many directions have not yet satisfactorily answered.

Still more striking was the fact that he fully appreciated the strength of unconscious forces in shaping the social life of man and came very near to developing a clear theory of the unconscious mind. Barker is therefore correct in saying that "Physics and Politics" turned political theorists into social psychologists and really began the psychological method. Mr. Driver also clarifies the connection between Darwin and Bagehot. It has long puzzled students to note how Bagehot, while deriving many of his basic ideas from Darwin, practically abandoned the doctrine of natural selection for that of creative evolution, and it is satisfactory to find that Driver, in the end, hardly classifies Bagehot as a Darwinian at all.

It is a little unfortunate that the newest matter in this book should be relegated to an appendix. One could easily have dispensed with many of the conventional biographical details regarding Carlyle, Spencer, and Marx, and have welcomed an extension of the investigations into the two streams of social-psychological thought reaching back into the seventeenth century. The analysis of Thomas Rowe Edmonds and Alexander Bain is a fascinating one, and the writer gives full credit to Bain for bringing the new German work on psycho-physiology and the problems of perception to England. Bain's empirical statement of association in terms of the physiological findings of Muller's school has a very real significance, and it has been said that he was the first Englishman to view experimental physiology as essential. His concepts of the reflex arc and of instincts were fundamental parts of his psychology and, as Driver points out, he was a pioneer in popularizing these ideas and in bringing psychology into the realm of ordinary reading people.

Professor Laski, as usual, is provocative and interesting, and freely sprinkles an essay on Alexis de Tocqueville with aphorisms like the following: "Who does not know Tocqueville cannot understand liberalism?": "liberalism is temperament rather than a creed": "Tocqueville and Acton were the essential liberals of the nineteenth century": and so on indefinitely. The book is somewhat unexpectedly concluded by Mr. R. A. Jones's lecture on Taine and the Nationalists, although Taine's place in political theory is not brought out, and the writer does not go beyond stating Taine's principle of the continuity of government by heredity. This, however, does not explain the nature of progress and does not solve many of the basic social questions that confront the historian.

As a whole, then, the book has more plan than its predecessors, but naturally suffers from a certain inequality of treatment inherent in any scheme of recurrent lectures of this kind. Nevertheless, its virtues make one regret the fact that the contemporary period cannot be covered in the same way, for perhaps no previous half-century has exemplified the influence of political theories as much as that since 1880, and the time is ripe for a general survey of political theory in the years before, during, and after the War.

STEPHEN H. ROBERTS.

THE NORTHAMPTONSHIRE COMPOSITION SCALE. By G. Perrie Williams. London: George G. Harrap & Co. 1933. Pp. 129. Price: 5s.

This monograph gives full details of the steps taken to draw up a scale for the measurement of composition at the elementary school level. The investigation was carried out in connection with the examination used in Northamptonshire for selecting children for admission to secondary schools. The facts presented add to the disquieting evidence already available concerning the lack of agreement between the marks given by different teachers when marking the same piece of composition. When 199 teachers independently ranked 50 compositions, we find, for example, that one child's work received positions ranging all the way from first place to forty-sixth place! Other cases vary in much the same way. The use of the scale resulted in much closer agreement between the judges. The scale was arrived at by combining the opinions of all judges. The fifty "scaled" compositions are printed at the end of the book. They are used as a standard of measurement by matching any new piece of work with its nearest counterpart in the scale. By far the greater part of the work which has been carried out in the devising of improved instruments of measurement in education has taken place in America; it is therefore pleasing to see the evidence provided by this book that there is increasing interest in such work in England.

K. R. CUNNINGHAM.

AUSTRALIA: AN ECONOMIC INTERPRETATION. By G. V. Portus. Sydney: Angus & Robertson, Ltd. Pp. 104. Price: 3s. 6d.

In a modest way, Mr. Portus has provided us with "An Intelligent Man's Guide to Australia To-day". He has tried, in his own words, "to set down in a hundred pages what seem to me to be the lasting and significant things in the Australian story". Considering the severity of these self-imposed limitations, it is surprising how well one's interest is retained, and how much real understanding is shown of a dozen and one different movements. Things seem to cohere and to fit into their place much better than in the average text-book of Australian history. For example, the journeys of Australian explorers are set against a background of the extension of pastoralism, and thus "cease to be that fortuitous succession of epic resolution and improvident enterprise that is the scourge of Australian schoolboys in the lower forms". Or, again, a thread of meaning is traced through the maze of land legislation, and its relation to the exigencies of politics suggestively indicated. And so on through our experiments in social legislation, our War efforts, and our endeavours to meet the World Crisis, Mr. Portus carries his story, indicating at every step the political and social repercussions of the events he is endeavouring to summarize.

Specialists in different fields will no doubt criticize his selection of facts and differ from his comments on them. But in no connection will his account be found seriously misleading and, in most cases, I should hazard the guess that the weight of informed opinion will be found definitely behind the author's judgments and interpretations.

On matters of style and expression, there can be no two opinions. Mr. Portus writes with a vigour, a clarity, and occasionally a pungency that is entirely admirable. A certain breeziness of expression tends to blind one to the fact, not merely that careful scholarship lies behind what is being said, but that wit and imagination are being used in its expression and exposition. Despite its modest size and format, one can experience in reading this book something of that curious quickening of the mind that H. G. Wells has, supremely, the genius to excite; something that makes knowledge exciting and exhilarating.

Which brings me back to my opening remark: I wonder how many "Intelligent Men" there are in our Australian public willing to become "excited" over their own history—to the extent of purchasing this book. From its price (3s. 6d.), it looks as though the publishers fear that the market, even for such a brilliant piece of popularization, is rather sharply limited. I wonder if they will be induced to confess their error, by issuing, shortly, a larger and cheaper edition at 1s., say.

W. G. K. DUNCAN.

THE PSYCHOLOGY OF LAUGHTER. By Ralph Piddington. London: Figurehead Press. 1933. Pp. 227. Price 10s. 6d. net.

It was Ribot who wrote that "laughter is the outcome of such a variety of different causes—physical sensations, joy, contrasts, surprise, eccentricities, unfamiliarity, low behaviour, etc.—that it is doubtful whether a common basis can be found for them". Undaunted by the obvious difficulty of the task, many psychologists and sociologists, and other writers who would claim to be neither, have attempted to advance a comprehensive theory embracing every kind of laugh. Leaving out of consideration for a moment the volume at present under review, I would say that all the attempts, with a single exception, have ended in more or less inglorious failure. The single exception is Anthony Ludovici's excellent little book, "The Secret of Laughter". Almost he convinces me that Ribot is wrong and that the thing can be done.

Yet another author, starting out, as is usual, from the proposition that all earlier attempts have failed, now essays to propound "a theory which, while harmonizing with those existing theories which are of value, offers an explanation of those aspects of the phenomenon which have never been explained satisfactorily". His hopes of success rest on the fact that his treatment is neither entirely psychological nor entirely sociological, that he has endeavoured both "to examine the psychology of the original reaction of laughter, and to relate this to the functions which it subserves in society".

Mr. Piddington begins with a review and criticism of earlier theories of laughter, from that of Descartes, which he justly calls "the first modern theory", down to such present-day views as those of McDougall and Kimmins. This review is a masterly one. My only complaints are that our author has fallen into the popular error of under-estimating Hobbes's "sudden glory" theory, and that he has made no mention of Anthony Ludovici. Some attention to Ludovici would, I think, have produced an increased respect for Thomas Hobbes.

Having reviewed earlier theories, and revealed the weakness in each, Mr. Piddington proceeds to outline his own. The biological function of laughter is declared to be that of communicating to parents the fact that their offspring is contented. Laughter gives expression to the feeling that all is well with the world, "that no further adjustment, beyond the one at the moment existing, is required". This explanation fits well enough the laughter of young children, but throws no light on our laughter at the ludicrous, since clearly many ludicrous situations are situations which do call for adjustment. So Mr. Piddington proceeds to an analysis of the ludicrous, striving, with considerable ingenuity, to show that every ludicrous situation involves a conflict of two propositions which must show three characteristics. They must deal with "affective reactions", that is, they must be conflicting evaluations rather than mere statements of fact; they must be social evaluations; they must not involve deep feeling. This analysis is a refinement of that of Dumont, who, while pointing out that every laughable situation involves two contradictory propositions, failed to explain how we can be faced with two such propositions without being in the least amused. Mr. Piddington claims to have indicated those other characteristics which the propositions must have in order to constitute a ludicrous situation, and with considerable skill applies his formula to illustrative examples.

Then, drawing a useful analogy between laughing and weeping, he outlines the relationship between elementary laughter and laughter at the ludicrous. The elementary laughter of the young child means, we saw: "All is well; nothing requires changing." Now every ludicrous situation, according to Mr. Piddington, involves something contradictory to a social evaluation, includes something that is mildly upsetting of the proper order of things, is "necessarily, though never seriously, subversive to the social order". So laughter, originally our reaction when all is well, comes to be our reaction when something is mildly wrong. This our author explains by invoking that principle of "psychic compensation" which Adler exploits. Laughter at the ludicrous is, he argues, an example of "exaggeration of the opposite character", or what Bernard Hart might call a "phenomenon due to the resistance". By the assumption of the attitude originally associated with laughter, namely, that "all is well", men spare themselves the consciousness, potentially painful, that "all is not well". This refusal to face facts and to be disturbed by contradictions is perfectly satisfactory in ludicrous situations, since they are "never seriously subversive to the social order". If the contradiction involved is serious, the situation ceases to be "ludicrous", and pity or moral indignation or some other more appropriate mood replaces the laughing one.

So brief a summary of Mr. Piddington's theory can scarcely do it justice. I must repeat that the author puts his case with very persuasive ingenuity, so that his reader is almost convinced. Almost, but not quite. For one thing, I am not satisfied concerning those three essential characteristics of the contradictory propositions in a ludicrous situation. Mr. Piddington makes no serious attempt to explain the distinction which he draws between statements of fact and of value, but refers his reader to another publication which is not at present accessible to me. Some further explanation at this point might have removed the difficulty which I now find in discerning, in every laughable situation, two contradictory social evaluations, two "propositions which deal with affective reactions". I would be interested to watch Mr. Piddington fitting his formula to the two propositions which follow, the one due to Wodehouse, the other to the immortal Josh Billings. "It was one of those still evenings you get in the summer, when you can hear a snail clear its throat a mile away." "There are two things a man never expects, and them is twins."

I think, too, that while Mr. Piddington has attempted to hold the balance fairly between sociology and psychology, the sociologist in him wrote more of the book than the psychologist. At least the emphasis, both in the discussion of elementary laughter and in that of laughter at the ludicrous, is on the social function of laughter. I would like to have seen him more interested in what it is in me that makes me laugh. He is obliged from time to time to insist that the features of ludicrous situations revealed by his analysis are not necessarily recognised by the laughter. If and when they are not, what makes the laugher laugh? When someone has answered that question, we shall understand the psychology of laughter. Ludovici, in his revision of the theory of Hobbes, went close to answering it. But I judge that the field is still open to any writer sufficiently courageous to try again. Laughter is delightfully elusive.

In the meantime, Mr. Piddington has written a very entertaining book which anyone interested in human nature—and who is not?—should certainly read.

C. R. MCRAE.

CAUSALITY: A LAW OF NATURE OR A MAXIM OF THE NATURALIST? By L. Silberstein, Ph.D. London: Macmillan & Co., Limited. 1933. Pp. 159. Price: 4s. 6d.

The attitude towards causality adopted by the author of this book has been exactly described in the following words by Planck in a criticism of the views of the positivist school of physicists: "According to the positivist teaching, causality is not founded in the nature of things themselves, but is, to put it briefly, an experience of the human mind. It plays an important rôle principally because it has proved itself fruitful and useful." According to Silberstein the principle of causality must be considered as a maxim, of heuristic value in the actual technique of physics, rather than as a law of nature. Thus he says: "The discussion is wholly reduced to the question whether it (the causality maxim) has been and is useful and whether it promises yet to render some good services or not."

In the first part of the book the author considers briefly, among other problems which he discusses as examples of the rôle of the causality principle in classical physics, the question of the age of the universe. He shows that our knowledge of the laws describing the behaviour of stars and nebulæ at present does not suffice to enable us to reconstruct the history of the universe. Consequently "the suite or causal line of the world, when traced into the past, gets increasingly blurred". This fact constitutes the principal argument of the author in support of his conception of the causality principle as a heuristic maxim rather than a universal law; namely, that we do not know the causes of some events and consequently cannot assert that they have a cause. On the other hand, we do not know that they do not have a cause, and rather inconsistently the author himself in the latter part of the book urges this in objection to the views of the modern indeterminists.

The distinction between a maxim and a law is not very clear. If the maxim is of value, then it states that things happen in a certain way, which is precisely what is stated by the law. In any case, it would appear that the attempt to evade the problem of causality by calling causality a maxim is futile; the question is whether there is or is not a causality in phenomena themselves. It is interesting to note that when the author attempts to criticize the conclusions drawn by the indeterminists from Heisenberg's principle, in the latter part of the book where he considers some modern problems in physics, he is only able to do so by implicitly abandoning the idea of the maxim and supposing that causality is a real relation between events.

In attempting to take the *via media* between the radical views of the younger physicists of the modern school, and the conservative attitude of the older physicists such as Einstein and Planck, the author has chosen a path which is not likely to lead to a solution of the problem of causality. While the treatment of the question in this book is rather unusual and some of the illustrations from physical theory are interesting, it cannot be said that the author has added anything of importance to the discussion of the problem.

F. J. P. WOOD.

BOOKS RECEIVED.

ONE HUNDRED YEARS OF PSYCHOLOGY: 1833 TO 1933. By J. C. Flugel. London: Duckworth. 1933. Price: 15s.

THE PRINCIPLES OF LOGIC. By C. A. Mace. London: Longmans. 1933. Price: 12s. 6d.

HOW WE THINK. By John Dewey. New York: Heath & Co. 1933. Price: 7s. 6d.

JOURNALS RECEIVED

THE JOURNAL OF PHILOSOPHY. Published Fortnightly. Columbia University, New York. Subscription: 4 dollars a year.

Vol. XXX. No. 15. July 20, 1933. The Right and Good—Methodology in Ethics: Sarah H. Brown. On Using the Word "God"—A Reply: H. N. Wieman. No. 16. August 3. Is Idealism Realism?—A Reply in Terms of Objective Idealism: C. Barrett. The Definition of Idealism: E. S. Brightman. No. 17. August 17. The Empirical Method of Philosophy: B. W. Brotherston. The Commensurability of Values: G. N. Belknap. No. 18. August 31. What is Poetic Truth?: Louis Harap. Data, Datives, and Ablatives: F. C. S. Schiller. No. 19, September 14. Recent Developments in Indian Thought: J. B. Pratt. No. 20. September 28. A Frequency Theory of Probability: Ernest Nagel. No. 21. October 12. Naturalism and Agnosticism in Santayana: S. P. Lamprecht. Report of the Chicago Meeting of the American Philosophical Association: H. A. Larrabee.

PHILOSOPHY. Journal of the British Institute of Philosophy. Published Quarterly. Macmillan & Co. Annual subscription: 14s.

Vol. VIII. No. 32. Intellectualism: Vitalis Norstrom. A Scholastic Theory of Art: V. Burdwood Evans. The Problem of Justice in Plato's Republic: B. M. Laing. Values and Their Relations: A. E. Garvie. Nietzsche and Epicurian Philosophy: A. H. J. Knight. Poetry and Truth: Helen Wodehouse. Cudworth and Descartes: Joshua C. Gregory.

MIND. A Quarterly Review of Psychology and Philosophy. Macmillan & Co. Yearly subscription: 16s.

Vol. XLII. No. 168. October, 1933. A Defence of Free-thinking in Logistics Resumed: H. W. B. Joseph. The Distinction Between Connotative and Non-connotative Names: Reginald Jackson. Ethical Words and Ethical Facts: A. E. Duncan-Jones. The Unity of the Universe: F. C. S. Schiller. The Construction of the External World: W. T. Stace.

PSYCHE. Published Quarterly. Kegan Paul, Trench, Trubner & Co. Price 5s.

Vol. XIII. 1933. Preface to a Dictionary: I. A. Richards. The 'Isolation' of the Ratios of Musical Intervals: C. L. T. Griffith. On Interpreters: S. L. Salzedo. Classification of Law: A. Kocourek. Evidence in History: A. M. Hocart. The Symbol in Legend: U. H. McConnel. The Termite Queen as the Brain of an Organism: Eugene Marais. Is Acquisitiveness an Instinct?: Ian D. Suttie. Ostentation: John Wisdom. Dialectical Materialism: P. A. Sloan.

INTERNATIONAL JOURNAL OF PSYCHO-ANALYSIS. Official Organ of the International Psycho-Analytical Association. London: Baillière, Tindall & Cox. Annual subscription: 30s.

Vol. XIV. Part 3. July, 1933. The Problem of the Duplicated Expression of Psychic Themes: Ludwig Jekels. Play, Reality and Aggression: M. N. Searl. New Ways in Psycho-Analytic Technique: Theodor Reik. The Super-Ego in Our Judgments of Sex: Fritz Wittels. The Jewish Phylacteries and Other Jewish Ritual Observances: M. D. Eder. Psycho-Analytic Aspects of Suicide: Karl A. Menninger.

THE HUMAN FACTOR. Journal of the Institute of Industrial Psychology. Published Monthly. London: Aldwych House. Price 2s. 6d. Annual subscription: £1.

Vol. VII. No. 9. September, 1933. Psychological Aspects of the Examination System: D. W. Harding. The Employer's Point of View—II. The Man and the Machine: Herbert Greenwell. Training and Unemployment: Morris S. Viteles. Electric Welding—The Rise of a New Craft: C. A. Oakley. The Dictating Machine in the Office: Frederick Hutchinson. No. 10. October, 1933. The Art and Science of Organization (I): E. G. Hart. The Employer's Point of View—III. The Management of Lads in Industry: A. C. R. Pope. An Enquiry into Reasons for the Choice of Occupation among Technical School Pupils: C. W. Valentine. The Worker's Point of View—XV. The Psychology of the Pay Envelope: W. F. Watson.

PACIFIC AFFAIRS. Journal of the Institute of Pacific Relations.

Vol. VI. No. 7. Economic Nationalism and World Cooperation: Lewis L. Lorwin. International Law and Anti-Japanese Boycott: H. C. Wang. Challenge to American Educational Leadership in China: Harold S. Quigley. Youthful Radicalism in the Far East: E. H. Anstice. The Future of Malaya: Rennie Smith. October, 1933. Banff Conference Supplement.

REVUE DE L'INSTITUT DE SOCIOLOGIE. Parc Léopold, Brussels.

Vol. XIII. No. 2. April-June, 1933. Spengler et le socialisme: Arturo Labriola. L'évolution sociale du mont-de-piété en Belgique: Helène D. Antonopoulo. La détermination des peines par les tribunaux répressifs en Allemagne.

RIVISTA DI FILOSOFIA NEO-SCOLASTICA. Published by the Faculty of Philosophy of the University of the Sacred Heart. Milan: Piazza S. Ambrogio 9.

Vol. XXV. No. 3. August, 1933. Il Problema della esistenza di una "filosofia idealistica": V. La Via. La determinazione teleologica nella vita organica ed il suo dinamismo causale: B. Rutkiewicz. Studio critico sulla gnoseologia (o psicologia pura della conoscenza propria e attuale) di Guiseppe Zamboni: A. Rossi. Esiste una "filosofia cristiana"?: G. Bruni.

NOTES AND NEWS.

To the Chair of Philosophy at Otago University, rendered vacant by the death of Professor Dunlop, has been appointed Mr. J. N. Findlay, of the University of Pretoria.

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During 1934, when the Editor will be absent on leave, his duties will be performed by the members of the Executive Committee, who have kindly consented to undertake the work.